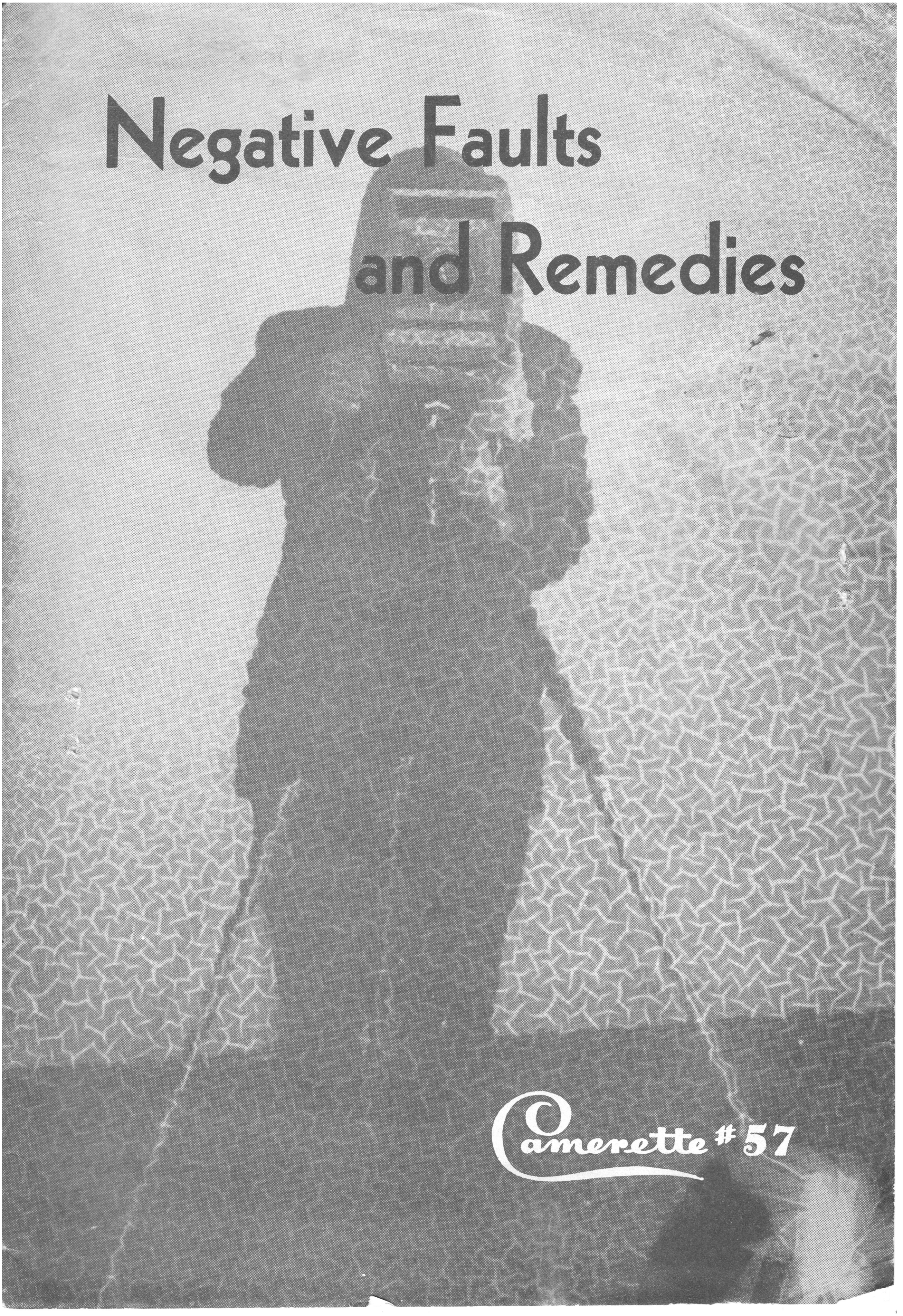
Negative Faults and Remedies



Camerette #57

Negative Faults and Remedies

by

Jane C. Smith

—Reprinted from THE CAMERA *Magazine*

NO one ever will be able to explain why your "best" negative always is the one that is scratched, stained, light struck, blistered or blurred. Somehow, the shot that "could have been" or "would have been" a dandy is the one that suffers from some mechanical defect or mishandling during processing.

While all defective negatives are not entirely worthless, the old adage of the ounce of prevention and the pound of cure is very appropriate. Many top-notch pictures have been made from negatives that would be considered worthless to the average photographer—but only after they have been worked over for many hours. A few minutes of forethought will save hours of afterwork.

Defective film is rare, indeed, for most manufacturers use scrupulous care to insure that their product will perform as specified.

Defective cameras are rare, too, when they leave the dealer's shelf but after a few years usage they can develop a lot of bugs that will ruin shots for you. It is a good idea to check up on the old box now and then.

If the bellows is old or worn you may expect to have light leaks, which show up on the film as heavy, dark streaks or wavy, black lines. If you have a bellows which might be leaky, remove the back from the camera and, in a darkened room, hold a small bulb inside the bellows. Any leaks will quickly show themselves and may be repaired by gluing black, opaque tape over the spots (better yet, have a new bellows installed). The light leaks are most likely to appear where the bellows is folded, especially at the corners.

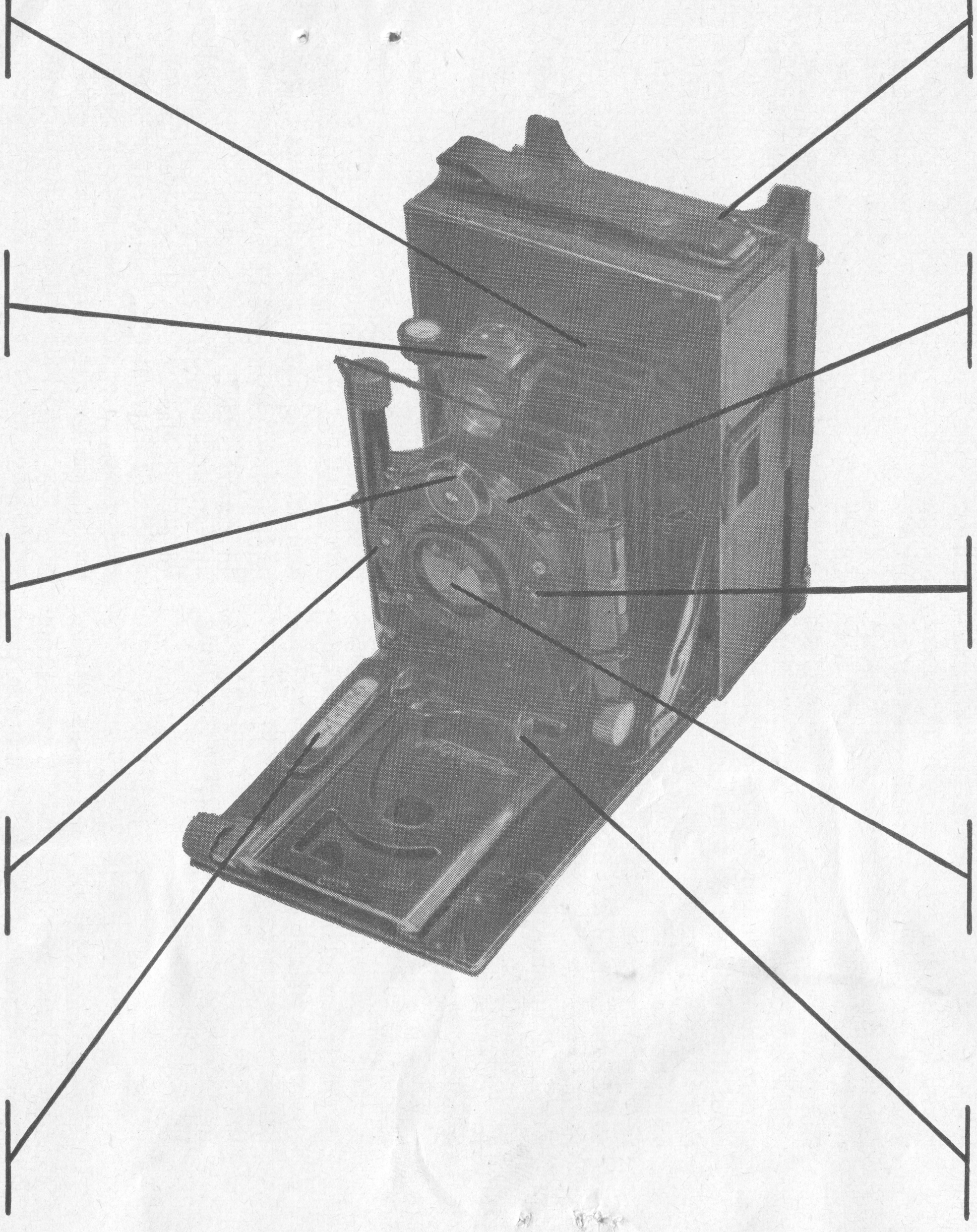
Another fruitful source of light leaks and streaks is to be found in the joints where the camera case closes. If, at one time or another, the case has been forced, it may be bent, allowing the light to slip through and fog the film. A camera repair man can quickly set this to rights or you can check the source of the trouble yourself by inserting the film and then taping all joints with the black opaque tape. If the trouble disappears after taping, then loose joints is the cause and they should be tightened or bent back into perfect shape.

If your camera has a spring back, or plate back, make sure that the springs have not become weak or loose, allowing the plateholders to fall away from the camera back and admit light. Loose or cracked dark slides, and warped film holders are other causes of light leaks at this point.

In the ordinary folding camera, the finder sometimes gets out of line and no longer indicates the true picture area. This results in cut-off heads, etc. The area covered by the finder may be checked by placing a piece of ground glass or oiled paper over the back of an opened roll film camera and comparing the actual image with the one shown in the finder. With a camera having a ground glass focusing screen, this procedure is not necessary.

The shutter and diaphragm are a team and the size of one dictates the speed of the other and vice versa, if a good exposure is to be had. It is seldom indeed that a diaphragm gets out of whack but the same cannot be said of shutters. Their action is slowed by cold or by springs weakening over a period of time. Instead of worrying about what the shutter speed actually is in parts of a second, learn to make allowances if you find your negatives too thin or too dense as compared to what they should be at certain speeds.

CAMERA CHECK CHART



Inspect bellows for light leaks, especially in the folds and corners, by inserting light bulb inside bellows in darkened room.

Check area covered by finder as compared to image on film. Oiled paper or ground glass may be used at the back of roll-film cameras.

Shutter speed should be sufficient to stop subject motion, and be correlated with diaphragm opening, to give the proper exposure.

If the shutter has a separate dial which must be set for time, bulb or instantaneous exposures, be sure it is in proper position.

Focusing scale should match lens on camera. If different lens has been installed, get new scale or use ground glass for focusing.

Springs on camera back should not be loose. To prevent lightstreaks check filmholders and cracked or broken dark slides for leaks.

Diaphragm opening should be set in accordance with shutter speed used and depth of field desired in picture. Do not jam or force.

Cocking lever for shutter. Unless this is set there will be no exposure. Some shutters are self-cocking and lack this lever.

Check lens for scum or moisture, especially if bringing camera into warm room after having had it in a cold atmosphere beforehand.

Pull out bellows until infinity stop engages proper slot on bed of camera, otherwise focusing scale will not read correct distances

A thin negative is the result of using too high a shutter speed for the diaphragm opening, or too small a diaphragm opening for the shutter speed. Such a negative will lack detail in the shadow areas.

If the negative is completely blank, then either the shutter has not operated (check the shutter setting and cocking lever) or, as frequently happens, the dark slide on the film holder has not been pulled out, or the lens cap was not removed before making the exposure.

The focusing scale on most cameras is calibrated for the lens furnished with the camera when it was purchased. If other lenses of different focal lengths are installed, the scale should be changed to one matching the new lens or all focusing done with ground glass.

The lens, of course, is the most important camera element and if kept clean and polished it should give no trouble. However, a thin layer of moisture or oil will give you some of the most blurred and fuzzy negatives of your career. Moisture is quite likely to form on a lens if it is brought indoors after having been out on a cold day. Transporting a camera in an unheated car, then setting it up quickly indoors without allowing time for it to adjust itself to the new temperature, is a sure cause of moisture formation.

Folding cameras which have a pull-out arrangement will be out of focus if the bellows is not pulled out so that the catch engages its proper slot on the bed. On miniature cameras which require that the lens be extended before taking pictures, neglecting to pull out the lens will produce a circular out-of-focus image on the film, the surrounding area being blank or slightly fogged.

When Taking Pictures

Precautions observed when taking the pictures will also pay dividends in preventing spoiled negatives. One of the simplest precautions is the use of a tripod. No hand-held shots should be made at less than 1/50 second and should you desire to enlarge the negative to any great extent, a tripod is a must, even for shots made at a high shutter speed.

While the amount of blur induced by camera shake may not show at all in a contact print or small enlargement, when the film is blown up, it will become very apparent as an overall unsharpness. This defect is sometimes attributed to faulty focusing whereas actually the camera was moved during the exposure.

Blurred images will result also from bad focusing and, in some instances, this is due to eyeglasses worn by the photographer which will not focus properly at close distances. The use of a magnifying glass to check image sharpness and the use of the smallest practicable aperture when taking the picture will aid in producing sharp negatives.

Even such a simple precaution as loading the camera in subdued light will help in getting better negatives. If outdoors, seek the shade of a tree or building while changing films or if neither of these is available turn your back to the sun and use your own shadow. If indoors, do not load near the lights you are using to illuminate the subject but instead use a spot where only the normal room light prevails.

Do not unreel too much of the protective paper on a roll film and if filmpacks are used, handle them only by the edges. Never press on the face of the pack as this may spring the safety cover and admit light.

Make sure that roll or pack is aligned properly before closing the back. This will prevent subsequent jamming of the film in the camera or an improper roll-up on the spool.

When changing films to the next exposure with a filmpack, pull the tab straight up gently but firmly until it stops and then tear it off. If handled too roughly, the tab may be torn from the film, or the film itself may be ripped, rendering the pack useless for further exposures.

With roll film, the numbers are observed through a window on the backs of many cameras. This window should be kept covered at all times, other than when actually rolling the film to the next exposure, an especially good practice if the camera is loaded with super-speed films. A prolonged exposure in bright light or sunlight will print an impression of the red window on the film. If the opening does not have a cover, use a piece of black adhesive tape, which may be removed and replaced as required.

The roll film should never be tightened on the spool by pulling on one end or cinch marks and scratches may result. If it is necessary to tighten a roll, take it into the darkroom, unroll it and rewind it.

If the film has not been properly wound or the film pack has been mishandled so that light has entered, the fault will show up as a dark, foggy area on the developed film, usually running from the film edge inward.

Such black, fogged marks may also occur anywhere on the film that incident light has reached. This light may have been reflected from a bright spot on the inside of the lens barrel or may have entered the lens itself. The use of a lens shade will cut this to a minimum. If a lens shade is not available, and you are shooting almost into the light, get in the shadow of some object or shield the lens from the glare with your hand or a hat.

Darkroom Precautions

Care taken in the darkroom is just as important as precautions used during the picture taking. To avoid spots and specks on your films, the darkroom should be kept as clean as possible and spilled hypo wiped up immediately. When loading films on the workbench, spread a piece of clean paper (newspaper will do) over it and do the loading on that spot. Do not allow sensitive materials, either exposed or unexposed to lie near the safelight or fog may result. The safelights have been designed for working illumination and are intended to be used at a distance of three feet as a minimum. Remember, too, the film is more sensitive when dry than when in the developer, where the safelight is used for occasional inspection during development.

When compounding solutions from printed formulas, follow the directions and add each chemical in the order called for in the formula. Failure to do this may leave suspended particles in the solution which may settle on the film and give rise to spots.

Fingerprints and like spots can be avoided if the hands are rinsed each time after being in developer or hypo and wiped on a towel. A handy place to keep the towel is folded over a belt around the waist; then it is always at hand when needed, and, being at hand, is much more likely to be used.

Processing Troubles

It is during the actual processing of the films that most troubles arise but here, again, a few simple precautions and following directions will eliminate all of them.

If tank development is used, make sure that the level of the developer in the tank is sufficient to cover the films. If below level add additional developer or replenisher.

Take the temperature of the solution and heat or cool it to the proper point before inserting the films. If the developer is too hot, blisters, frilling or other emulsion damage may occur and if too cool, the developer will not function properly and the negatives will suffer in quality.

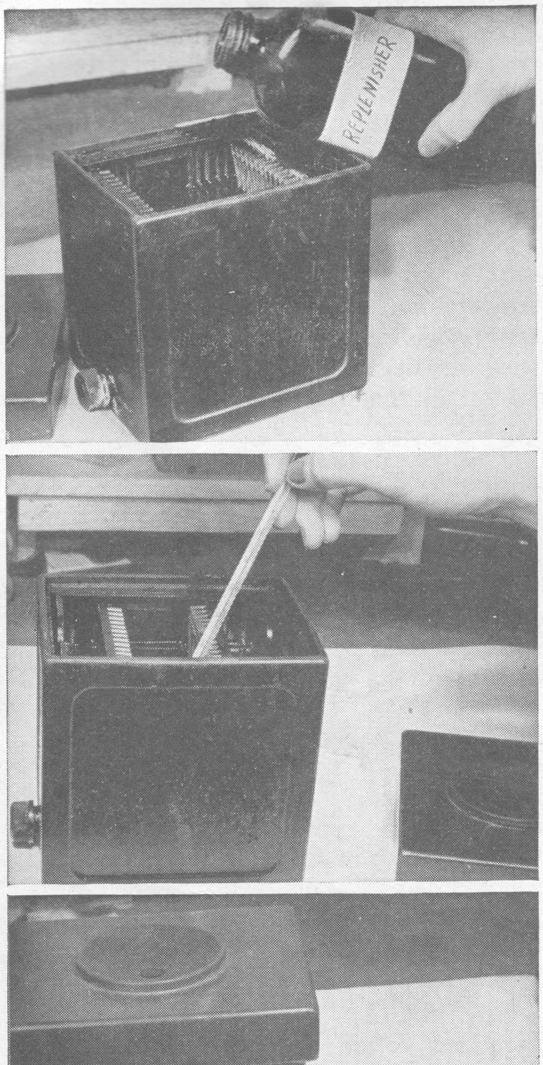
The time of development should be watched, as it is nearly as important as the temperature. Too much time will give a contrasty negative and too little will result in a weak, flat negative, neither of which will represent all the tones of which the film is capable.

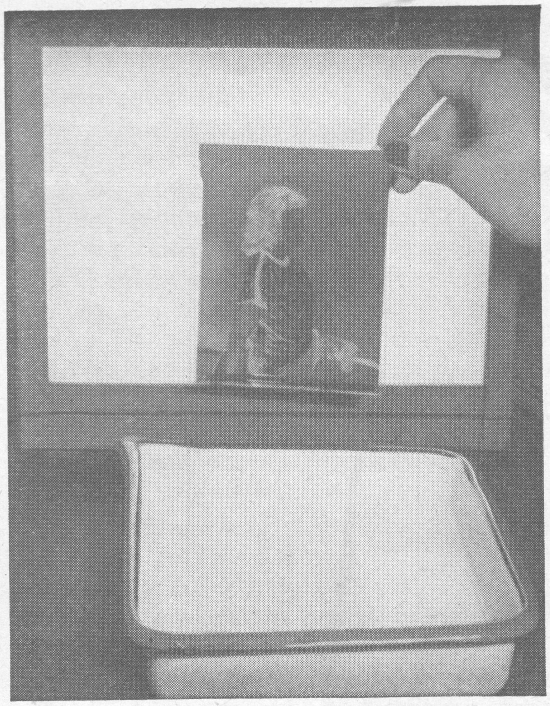
The use of clean tanks and trays is important, too, as spot troubles and stains may result, the latter oftentimes difficult to trace to their cause.

While the process of development is one primarily based upon time and temperature, there are those who like to inspect the films to see how the image is shaping up. Such inspection should not be done until at least half the developing time has elapsed and then only briefly and at a good distance from the safelight. Holding the film close to the light will produce fog and possibly a complete reversal of the film. Safelights deteriorate with age and dampness and may not be as safe as when new. If fog persists, move the light farther away or get a new glass. Use the proper-wattage bulb at all times.

After the films have been developed and fixed they should be washed thoroughly but do not allow them to float around in a tray where they may come in contact with each other when in motion, or scratches and digs will result. The temperature of the wash water should be as near the processing temperature as possible. Water which is too hot will have a tendency to swell the emulsion, making it more susceptible to further damage.

Before hanging them to dry, they should be wiped carefully with a tuft of cotton to remove any particles which may dry in the film. Cut films are best hung up by the short side as this way they seem to dry in a shorter time. Be careful when placing the clip as the film should be caught only by the edge. When drying roll films, place one or more clips on the bottom of the roll to prevent it from curling upward and sticking together as it dries. The smaller the film the more important this is, as a miniature film will turn and twist like a dancer as the moisture evaporates.





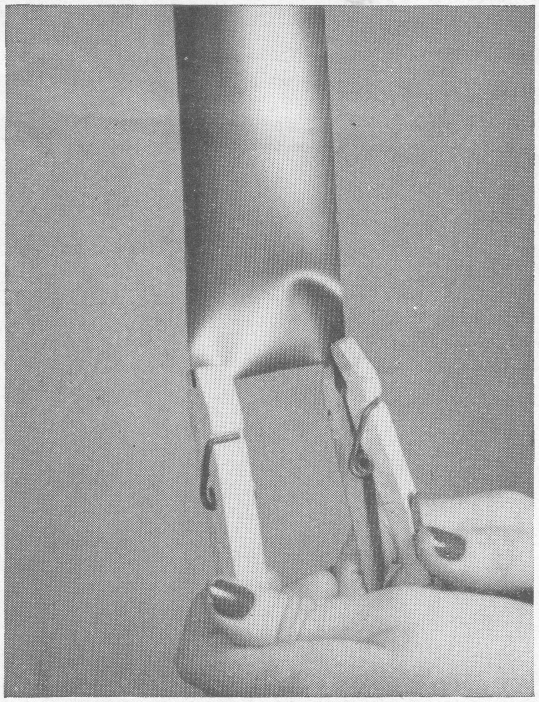
PROCESSING

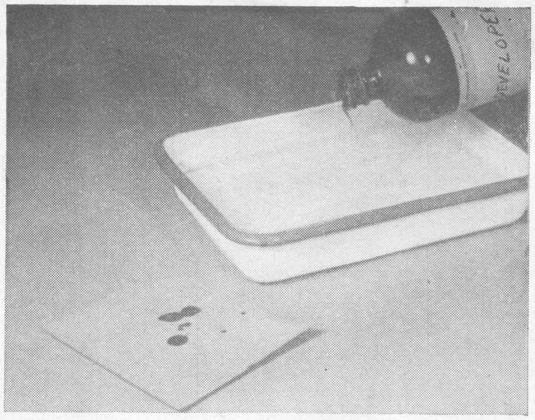
Upper left: keep developer at proper level to insure overall film development. Add fresh solution or replenisher to keep developer at proper strength. Take temperature of solution, then warm or cool it until it is 68° F. or other specified temperature. Use accurate thermometer. Watch time carefully and avoid overdeveloping negatives. Lower left: if trays are used, be sure they are clean and uncracked or stains may appear on films which are difficult to trace. Upper center: do not inspect films too close to safelight during development or serious fog, and perhaps reversal of image may result. Do not examine films at all until at least half of developing time has elapsed. Use proper safelight for film.

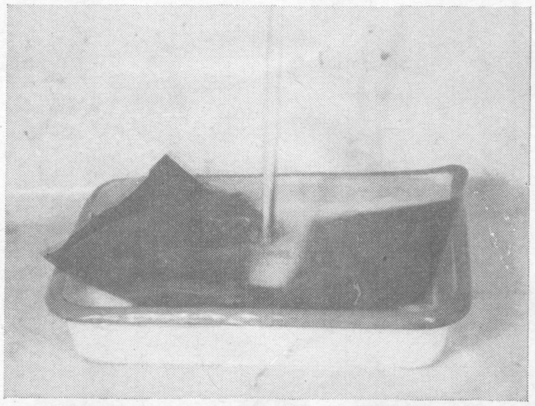
To avoid drying spots, the films, in addition to being wiped off, as mentioned above, should be dipped for a few seconds in one of the wetting-agent solutions before being wiped and hung to dry. Drying should take place in a current of warm air, if possible. Avoid hanging films in any spot which is likely to be laden with dust.

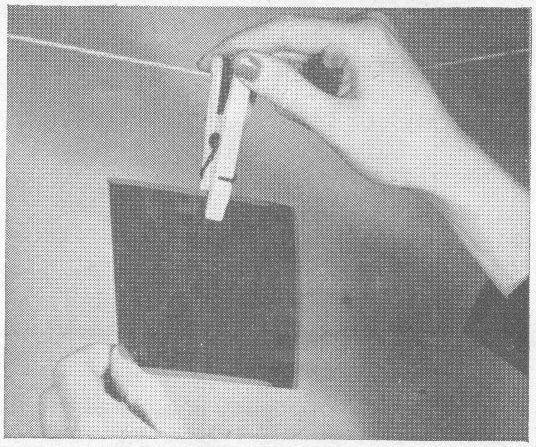
Grain

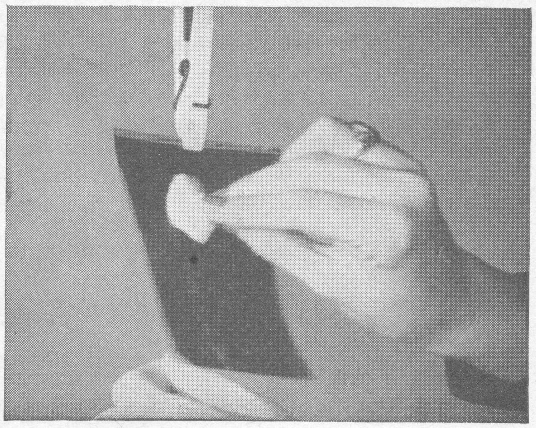
The bugaboo of many photographers is the graininess of the developed film. While some grain may be ascribed to the method of processing, it is mostly due to the characteristics of the emulsion itself and to the exposure.











CHECK-UP

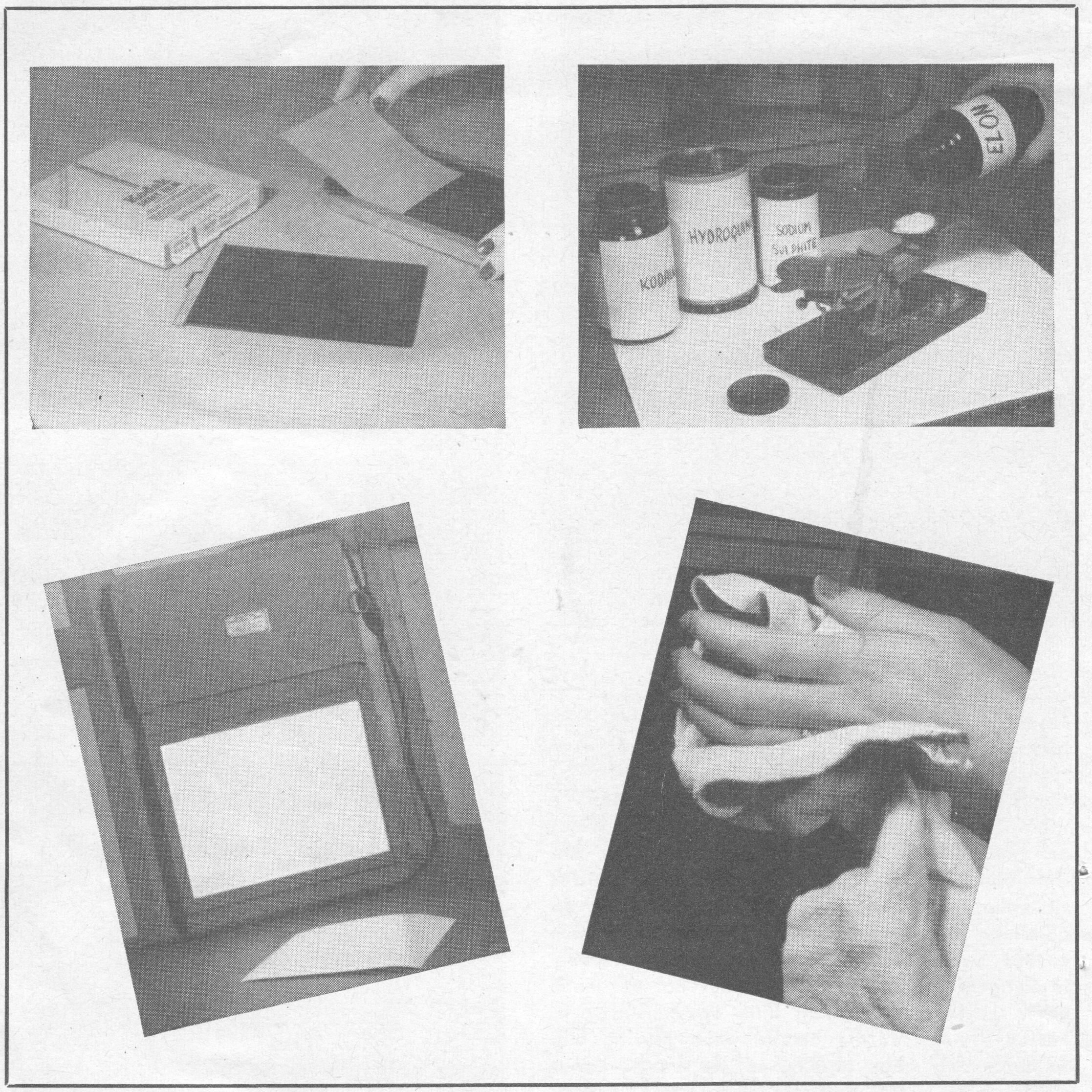
Upper left: attach one or more clips to the lower edge of drying roll film to prevent it from curling upon itself and sticking while drying. Upper right: do not fill trays near sensitive material where splashes can fall upon it. Clear or dense areas will appear when films are developed. Upper center: do not wash negatives violently in tray as the edges may dig into an adjoining film and cause deep scratches which cannot be eradicated. Wash gently, preferably in hangers where the films cannot contact each other. Lower center: hang films up short way to hasten drying and be careful when placing clip to catch only edge of film, not as shown. Lower right: wipe films carefully with damp cotton.

As a general rule, the slower films have much finer grain than the fast films, although in recent years the fast "super" emulsions have been vastly improved in this respect.

Over-exposure in the camera and over-development in processing are the chief producers of a grainy image. The best results are had when exposure is just sufficient to give the shadow detail desired and development is not carried too far.

Fixing, washing and drying seem to have little effect upon the grain unless the temperatures deviate to the extreme. Excessive heat, for instance, will cause blisters, frilling and reticulation, and completely destroy the

DARKROOM CHECK-UPS



Upper left: a fresh piece of clean paper spread over the workbench will provide a chemical-free spot to load or unload films. Developer or hypo dust arising from dried solutions will cause dark or light spots on films. Upper right: add chemicals in order given in formula otherwise one or more of the constituents may not dissolve and will give trouble in the solution. Lower left: safelights are designed to be used with the proper-wattage bulb at the specified distance, usually three feet, and for short periods only. Do not allow sensitive materials, either exposed or unexposed, to lie near the light or fog will result. Safelight may be checked by placing a piece of film or paper at usual working distance from light, allowing it to remain for twice the time such material would be ordinarily exposed and then developed. Fog indicates light is unsafe or too close. Lower right: rinse and wipe hands between solutions to avoid fingerprints on negatives.

image in those portions of the emulsion subjected to it.

If fine grain is wanted, use a fine-grain film, a fine-grain developer and keep the exposure of the film as much on the "light" side as is possible. Pay close attention to processing temperatures and avoid over-development.

NEGATIVE FAULT KEY

How to use: With the negative at hand, run down the principal headings below until the fault is described *generally* by one of the headings. When this is found, choose the statement appearing under the heading that most nearly fits the defect, then turn to the page indicated where the appearance, cause and remedy will be fully described. For instance, we have a negative which is thin, the image barely visible. Running down the main heads we find No. III Indistinct Image, under No. III we find several choices, the one most nearly fitting the defect being (c)—very faint and light, most of negative clear which refers us to page 109.

	Page
I—NEGATIVE PHYSICALLY DAMAGED	
A—Film ripped or torn	90
B—Emulsion damaged	
1—portions of emulsion gouged out of film	90
2—tiny pinholes, blisters or craters	92
3—emulsion loosened from film base	91, 93
4—emulsion scratched	
a—fine scratches running length of film	90
b—fine scratches at all angles	90
c—abraded, brush like scratches	90
5—Foreign particles imbedded in emulsion	92
6—Emulsion creeps, distorting image	93
7—Emulsion broken into series of fine light and dark lines	92
II—IMAGE BLURRED OR NOT SHARP	
A—Unsharp locally	
1—center sharp, edges blurred or distorted	102
2—background sharp, moving subject blurred	102
3—moving subject sharp, background blurred	103
4—subject sharp, background or foreground not sharp	101
5—image blurred or distorted in certain areas only	102, 103
B—Unsharp generally	
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2—entire image blurred in one direction	102
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4—entire image hazy and diffused	94, 95
III—IMAGE INDISTINCT	
A—Fogged	
1—edges of film, normally clear, show silver deposit	106
2—edges clear, image fogged	106
3—image hazy and indistinct	95, 106
B—Barely discernible because of density of negative (also see IV)	94, 110
C—Very faint and light, most of negative clear (see also V)	109
D—Negative partially positive	93
E—Image distorted in flowing pattern	92
F—Image broken by pattern of light and dark lines	92
G—Circular image on film—rest of film blank	104
IV—NEGATIVE TOO DARK OR DENSE	
A—Film black, no image	
1—completely black, including edges	100
2—image area black, edges clear or fogged	106
B—IMAGE VISIBLE, NEGATIVE DENSE	
1—little contrast, highlights blocked	110

- 2—correct contrast, highlights blocked ... 110
- 3—contrasty, highlights blocked ... 110

V—NEGATIVE TOO LIGHT OR THIN

- A—Film completely blank, no image ... 100
- B—Negative thin
  - 1—little contrast, no shadow detail ... 109
  - 2—correct contrast, no shadow detail ... 109
  - 3—contrasty, no shadow detail ... 109
  - 4—thin but with good shadow detail ... 109

VI—NEGATIVE WITH CLEAR OR LIGHT AREAS

- A—Blotches or spots
  - 1—small pinholes, emulsion roughened ... 92
    - a—small pinholes, emulsion smooth, unbroken ... 92, 94
      - 1—visible only upon enlargement ... 92, 93
  - 2—small or large areas with clearly defined regular borders, usually not reaching film edge
    - a—pinhead size ... 92, 93, 98
    - b—larger than pinheads ... 93, 98
    - c—irregular, resembling splashes ... 98
  - 3—part of image fully developed, rest of film clear line of demarcation at right angles to film edge ... 94
  - 4—light areas with moderately or well defined edges running to edge of negative 96
  - 5—running downward from dense areas ... 98
  - 6—fingerprints ... 98
  - 7—spot edged by darker area ... 96
- B—Streaks
  - 1—running downward from dense highlights of negative ... 98
  - 2—clearly defined, usually reaching borders of film ... 96
  - 3—irregular, with shaded edges ... 96
  - 4—emulsion dug from film base ... 90
  - 5—light streak or spot surrounded by darker ring ... 96
- C—Lines
  - 1—fine, light lines running parallel to film edge ... 90
  - 2—fine or heavy gouged line running parallel to film edge, sometimes entire length of roll or recurring at intervals along film ... 90

VII—NEGATIVE WITH OPAQUE OR DARK AREAS

- A—Film black, no image
  - 1—completely black, including edges ... 100
  - 2—image area black, edges clear or fogged ... 106
- B—Blotches or spots
  - 1—well defined round or oval spots, usually small ... 99
  - 2—irregular, or round splashlike markings, regular edges ... 99
  - 3—fingerprint ... 98
  - 4—irregular blotches or streaks, may appear anywhere on film ... 98, 99, 101
  - 5—mottled effect on film ... 98, 101
  - 6—circular, appearing in same relative position on film as red window does on camera ... 100
  - 7—drop like, darker on edges than in center ... 96
  - 8—specks of foreign matter imbedded in emulsion ... 92
  - 9—along edges of film, same shape as holes in film hanger ... 99
  - 10—heavy silver deposit over and around highlights, may radiate therefrom 93
  - 11—irregular, usually running from edge of film toward center ... 99

C—Streaks

- **1—straight, usually starting at or near edge of film and crossing at right angles** to opposite edge. May be wide or narrow, sharp edges, seldom accompanied by fog 99
- 2—starting at or near edge and running in any direction, some may be longer than others and all may start from common point, usually accompanied by fog 99
- 3—running inward from edge, regularly spaced 98, 99
- 4—branching or forked, lightning-like, may start from spot at common center or may appear singly or in groups 101
- 5—serpentine or wavy 99

D—Lines

- 1—parallel to film edge 90
- 2—branching or fanlike—see c-4 above 101
- 3—serpentine or wavy 99

VIII—MULTIPLE OR PARTIAL IMAGES

A—Multiple image

- 1—two images superimposed 104
- 2—part of film with single image, part with second image superimposed 103

B—Partial image

- 1—part of image cut off by edge of film 103
- 2—film partially developed, line of demarcation at right angles to film edge, rest of film blank 96
- 3—image out of focus and in small circle on film—rest of film blank 104

IX—IMAGE DISTORTED

- A—Wavelike pattern in emulsion bending image 92
- B—Image broken by fine pattern 92
- C—All or part of negative becomes positive 93
- D—Image relatively sharp but elongated in direction of travel 102
- E—Image distorted on edges 102
- F—Separation negatives fail to register when dry 102

X—FOG

- A—Film fogged including edges 106
- B—Film fogged excepting edges 106
- C—Fog local, not general over film 99, 106
- D—Streaks running from point at or near edge of film 99
- E—Appearing green on film surface, red by transmitted light 106
- F—Image hazy and indistinct with bleeding of lights into shadows 94

XI—COLORED STAINS

- A—Blue 108
- B—Yellow or sepia 107, 108
- C—Green 108
- D—Green-red 106
- E—Purple 108

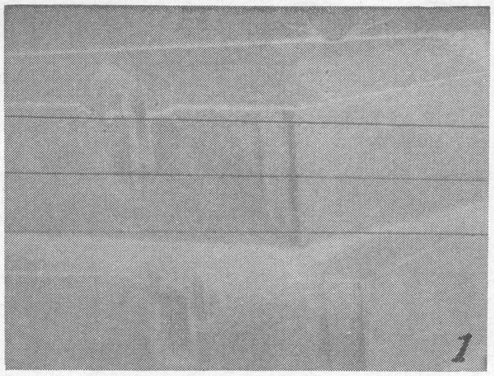
XII—SCUM OR DEPOSITS

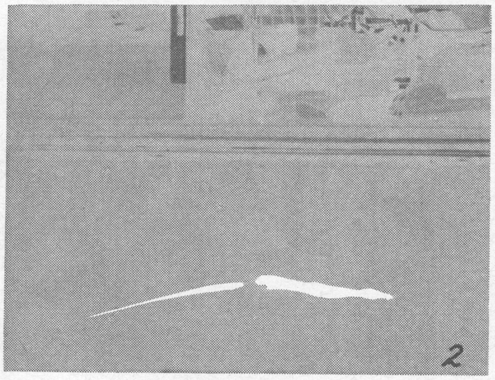
- A—Crystalline 108
- B—Silvery 108
- C—Slimy 108

XIII—FADING

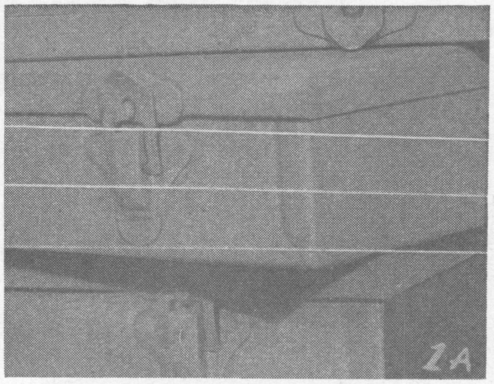
- **A—Yellowish, sepia** 108

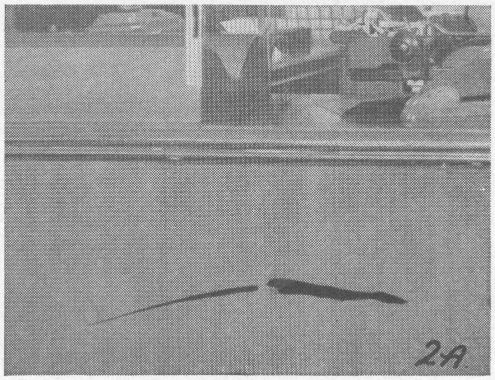
Negative





Print





SCRATCHES (1): light or dark lines running parallel to the length of the film.

Cause: mechanical; dirt or grit coming into contact with the emulsion side of the film. Tightly-wound rolls. Dark scratches are produced prior to the development of the film, light scratches after film is developed.

Prevention: keep film clear of dirt or grit. Wind roll film at required tension. Clean all filmholders.

Remedy: none, except possibly a considerable amount of difficult retouching.

DIG IN EMULSION (2): clear white, transparent spot of any shape, through emulsion to film base.

Cause: careless handling of film during development, washing or fixing. May occur after film has dried, if dug severely.

Prevention: handle film carefully, and only by the edges.

Remedy: possibly dye retouching.

ABRASION AND GENERAL SCRATCHES: brush-like scratches in any direction. General scratches of any nature.

Cause: dirt or grit on the plate holders. Negatives coming in contact with one another during storage. Tightly-wound rolls.

Prevention: keep film clear of dirt or grit. Store negatives in individual envelopes or interleave with black paper such as is used in packaging film.

Remedy: none, except, possibly, retouching.

DARK SCRATCHES (1): fine dark lines running parallel to the film.

Cause: mechanical trouble with the winding device. Possible grit or dirt carried in film holder or tightly-wound roll. Burrs on film holder, stuck film roller. Dark slide or septum touching film. Occurs prior to development.

Prevention: be sure to load or unload film where a clean space is provided. Clean holders and make mechanical check-up.

Remedy: none.

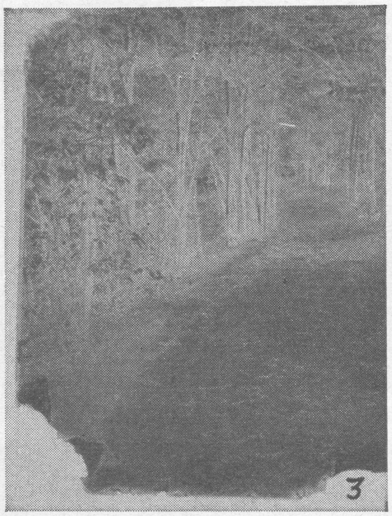
FILM RIPPED OR TORN: part or half of the negative completely ripped or torn, possibly leaving jagged edges.

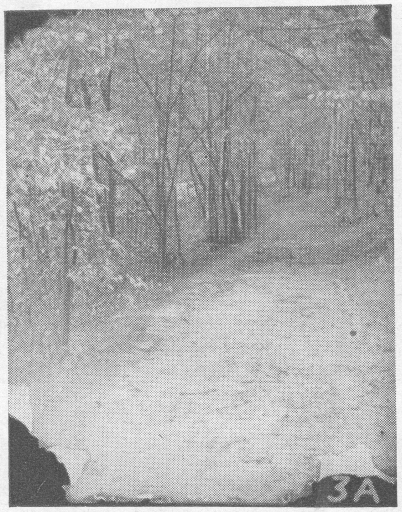
Cause: mechanical jam or forcing of film into holder. When using a film pack, this defect often occurs if tabs are not pulled out evenly.

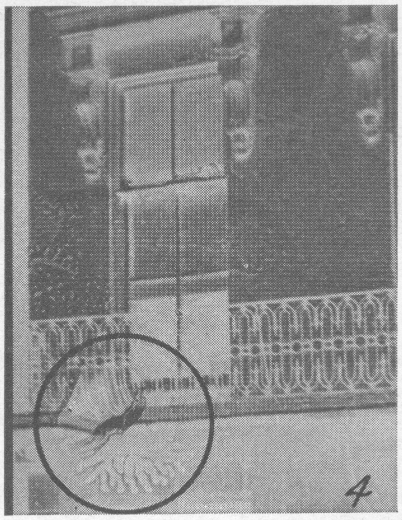
Prevention: Be sure cut film is in the grooves provided before sliding the film in. Pull filmpack tabs carefully and never force film.

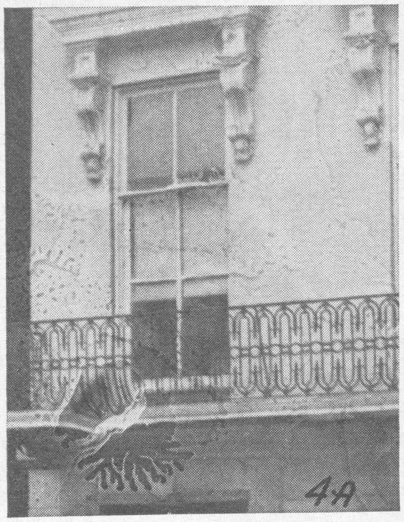
Remedy: **none.**

Negative **Print**









FINE LIGHT LINES: running at any angle to the film but usually parallel to one another.

Cause: considerable grit or dirt; cinching or winding developed film too tight will create such a defect. Generally occurs when film has been processed.

Prevention: handle and keep film free of dirt and grit.

Remedy: none.

FRILLING (3): edges of emulsion loosened from its support.

Cause: may occur from (1) exhausted fixing bath; (2) too strong a hypo bath; (3) washing in warm water; (4) careless handling; (5) solutions too warm.

Prevention: (1) always use fresh fixing solution and in the proper quantities; (2) do not wash or fix in too warm a solution; (3) handle film carefully. Controlling temperatures in the summer calls for the addition of ice. Never put ice in the solutions as it will cause dilution. Put it in a tray large enough to hold those used for processing.

Remedy: none.

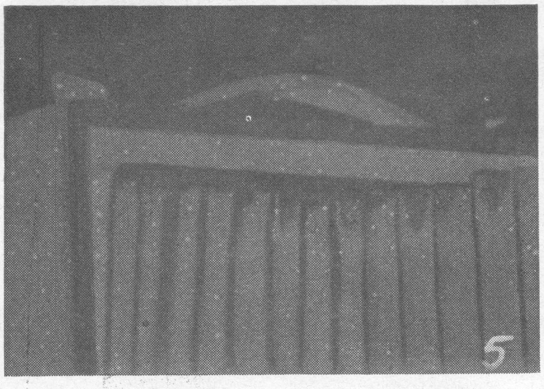
BLISTER (4 and 5): raising of the emulsion with a flesh-like blister. When blisters have dried they appear crater like.

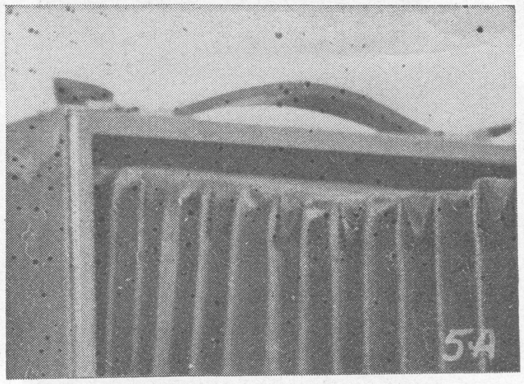
Cause: gas pockets forming between the emulsion and the film support as a result of (1) processing solutions too warm; (2) allowing water to fall directly on emulsion side of film; (3) developing or fixing baths too concentrated. These pockets are formed by carbon dioxide disrupting the soft emulsion. (Type shown in Fig. 5.)

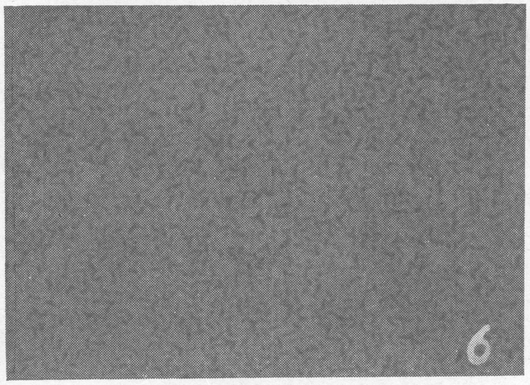
Prevention: (1) do not have processing solutions too warm (68°-70°); (2) keep the water from falling directly on the film; (3) have processing solutions

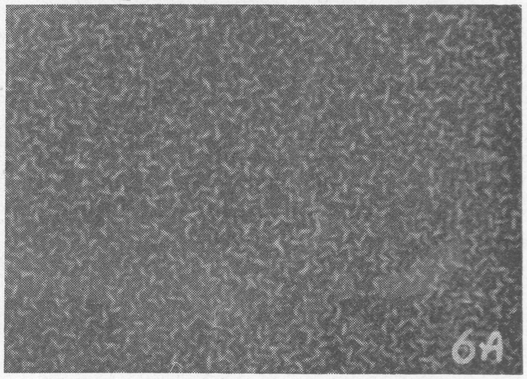
Negative

Print









of the right concentration. Washing the negative between development and fixing will prevent carbon dioxide pockets from forming, especially under hot weather conditions. The elimination of carbonate in the developer, replacing it with a non-carbon-dioxide-forming substance (borate or phosphate), will also prevent gas pockets.

Remedy: none.

PINHOLES (5): small, white, transparent spots the approximate size of a pinhead appearing most anywhere on the film. Airbells. (See #15.)

Cause: dust collecting on the film either in the bellows of a camera or in equipment prior to exposure.

Prevention: clean bellows of your camera and also other equipment, especially the negative carrier. Dust falling on the negative itself can easily be removed with a few strokes of a camel's-hair brush. Keep solutions at proper temperatures.

Remedy: such pinhole spots can be removed by means of spotting or retouching.

RETICULATION (6): emulsion indented or broken into fine, black-and-white lines with the appearance of a leather-like grain.

Cause: this defect is due to submitting the film to severe changes of temperature in successive solutions. Transferring the film from a solution at one temperature to another of higher or lower temperature will result in the emulsion swelling and/or contracting.

Prevention: keep all processing solutions at an even temperature.

Remedy: sometimes, reticulation can be removed by dipping the film in a 10% solution of formaldehyde and then drying the film at high temperatures. This remedy, however, is not workable all the time, nor recommended too strongly. .

DIRT (7): small dust particles adhering to the emulsion.

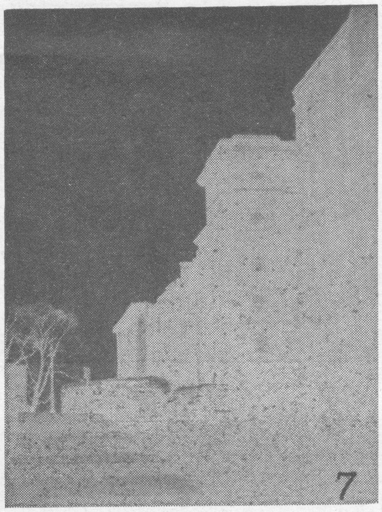
Cause: during drying the emulsion is viscid and at this stage will easily pick up dirt or dust particles floating in the air.

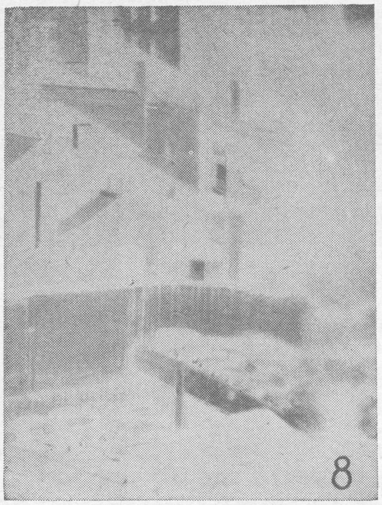
Prevention: wash thoroughly and swab with a piece of cotton. Hang negative in a clean place.

Remedy: dirt is not too easy to remove, but careful washing, swabbing and drying may remove most of the particles.

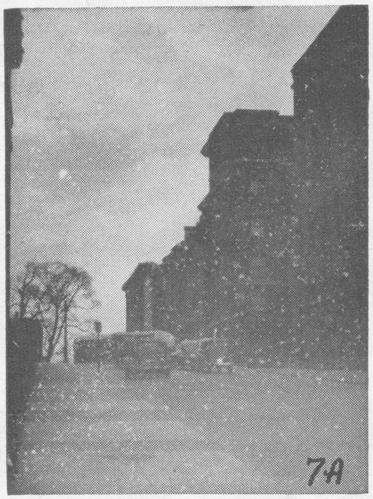
FLOWING EMULSION (8): softened emulsion that has flowed, causing the emulsion to become distorted.

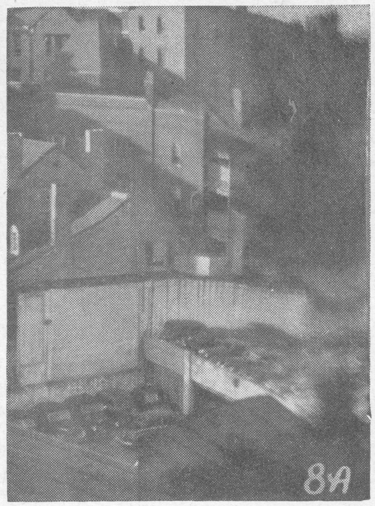
Negative





Print





Cause: processing solutions were extremely warm or an attempt was made to print the negative, while still wet, in an overhot enlarger.

Prevention: use solutions at the required temperature (68°-70°) and wait until the negative has dried before printing.

Remedy: none.

SMALL CLEAR SPOTS ON FILM: film with clear spots, emulsion undamaged.

Cause: dust falling on film before exposure.

Prevention: clean camera and film holders for any dust that may be present.

Remedy: retouching.

OUT OF FOCUS (9): image completely blurred and distorted.

Cause: either the aperture was too large for the depth of field required or a focusing error was made.

Prevention: use ground glass for proper and clear focusing. The use of Depth of Field Tables and Formulas will also eliminate the depth-of-field question.

Remedy: none.

REVERSAL (10): parts of the negative appear positive while other parts remain negative.

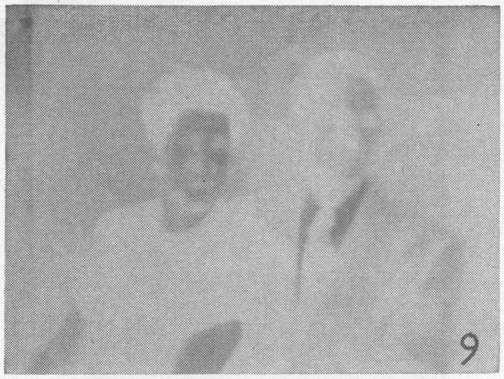
Cause: exposing film to bright light during development time; also, the wrong safelight for the particular film you are using will cause a reversal on your film.

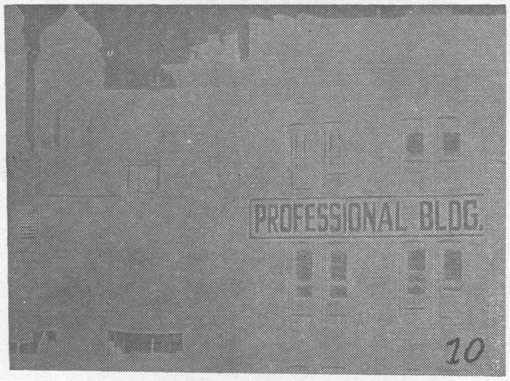
Prevention: use correct safelight and keep the film free from exposure to bright lights.

Remedy: none.

HALATION (11): expansive, halo-like light area surrounding highlights. Often suggestive of a double exposure.

Negative **Print**





Cause: when shooting bright subjects such as night scenes, street lights, rainy reflections, etc., the light is reflected from the back of the film support to the emulsion in all directions, thus causing secondary images in the form of halos.

Prevention: practically all modern films have an anti-halation backing, which absorbs the image-forming rays instead of reflecting them forward. Very full exposure and curtailed development will also tend to reduce this defect.

Remedy: reduction or retouching may help.

NEGATIVE TOO DENSE (12): negative appears almost black but the image is still barely visible.

Cause: this is due to greatly over-exposing the negative. In other words, too much light was allowed to enter for the light content of the subject in question. Over-development also will often cause a dense negative.

Prevention: special light meters have been manufactured for correct measurement of the exposure in every situation. If you do not own a light meter, judge to your best ability the amount of light required to enter the lens. In development, the exact required times are given on the package of the developer you happen to be using. Follow the manufacturer's instructions for the length of development time and you will lessen this defect.

Remedy: reduction in Farmer's Reducer containing a low percentage of potassium ferricyanide. Soak the negative in this solution until the negative has been reduced to the desired density. Wash and dry.

IMAGE INDISTINCT (13): negative has more or less indistinctness and blurriness.

Cause: the lens has a coating of oil, grease, dirt, or other foreign matter.

Prevention: always be sure to keep lenses free and clean of dirt or grease.

Remedy: none.

FILM PARTIALLY BLANK (14): part of the negative appears developed while others appear absolutely clear.

Cause: if using a tank, failure to pour a sufficient amount of developer, will cause development of the part immersed, while the part not immersed remains hopelessly clear. Failure to immerse film completely while using a tray will bring about the same effect.

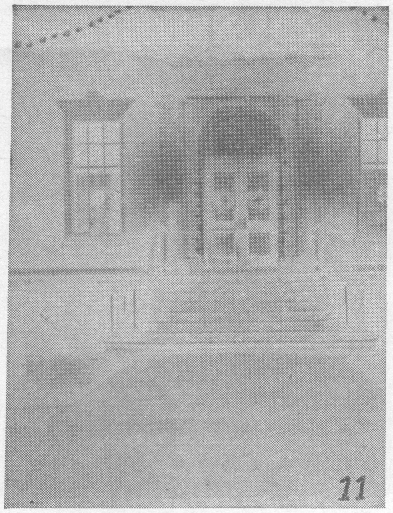
Prevention: always check to be sure that there is sufficient amount of developer in the tank you are about to use. If using a tray immerse the entire film in the developer.

Remedy: none.

AIR BELLS (15): tiny, clear spots, round or elliptical in shape with well-defined edges.

Negative

Print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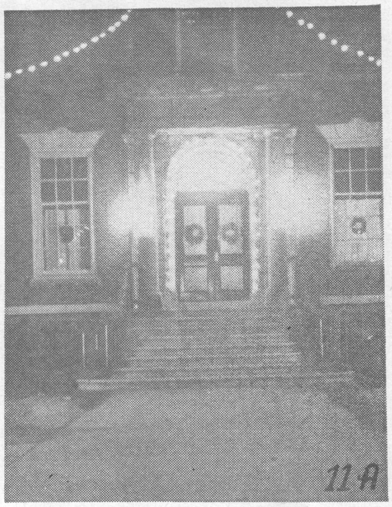
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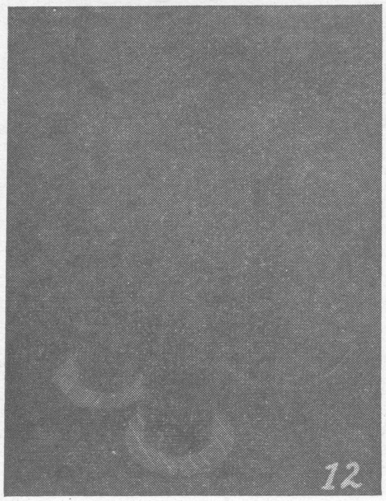
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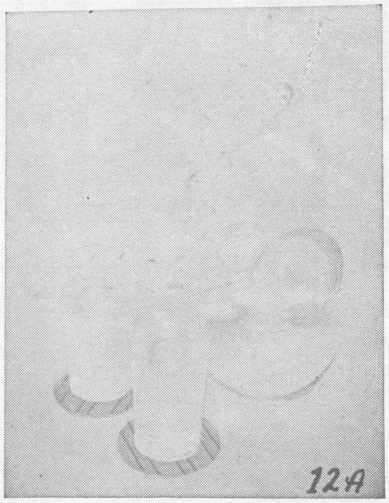
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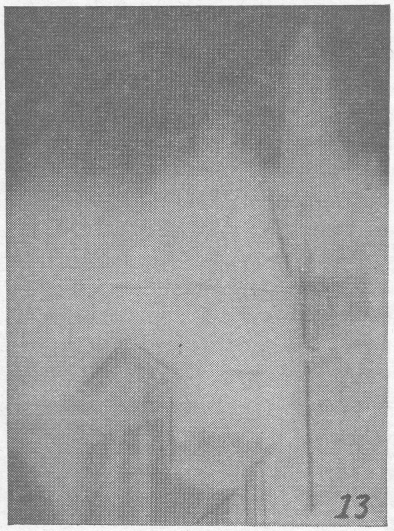
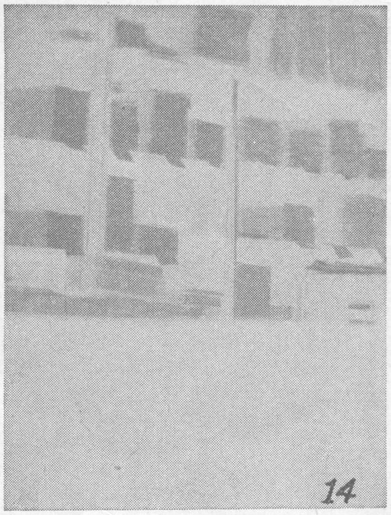
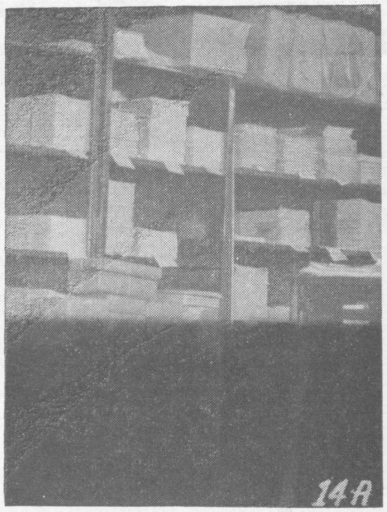
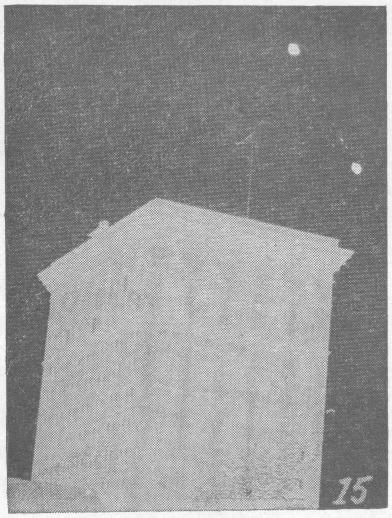

13

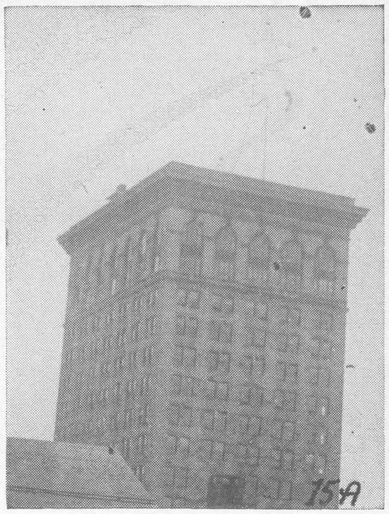
13A

Negative **Print**









Cause: usually caused by bubbles forming on the emulsion, thus preventing the action of the developer. Improper agitation in the developer and fixing bath will also cause air bells.

Prevention: always agitate thoroughly and evenly, fully immersing the film in the developer and hypo. Use of wetting agent or presoaking film in clear water also helps.

Remedy: none, except possible retouching.

BELLOWS OBSTRUCTION (16): clear area cutting off corners of the film, usually sharp-edged.

Cause: an obstruction of one kind or another in the bellows or before the film has prevented the light from reaching part of the film.

Prevention: support bellows or, if old, replace with new. See that the area before the lens is clear before taking picture.

Remedy: none.

DRYING MARK (17): drop-shaped spots lighter in center.

Cause: quick drying of large water droplets by heat. Drying marks also occur if water is splashed on the negative after it has dried.

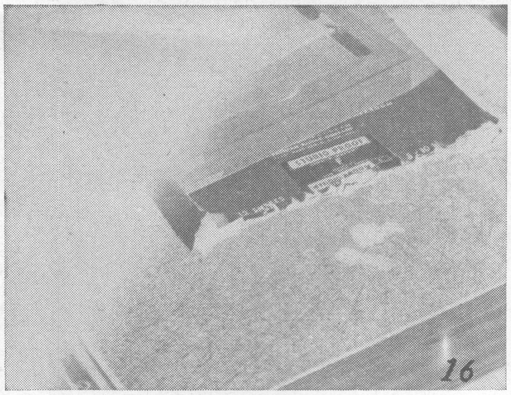
Prevention: dry negatives in a reasonable time and keep water from coming in contact with dry negatives.

Remedy: bleaching in the ferricyanide solution used in the sepia bleach-and-redevelopment process, then redeveloping the negative in a black-and-white developer.

CLEAR AREA ON FILM (18): clear, fuzzy area on the film.

Cause: some form of object in front of the lens during exposure, such as a finger, part of a camera case or similar objects.

Negative **Print**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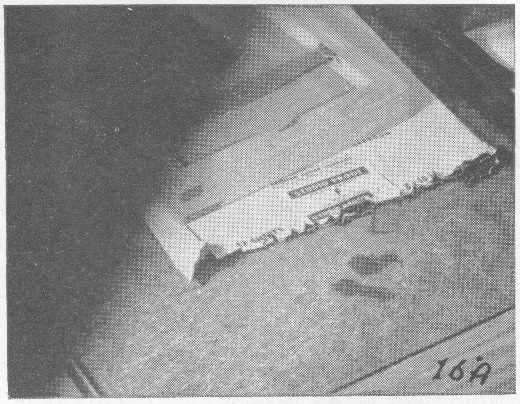
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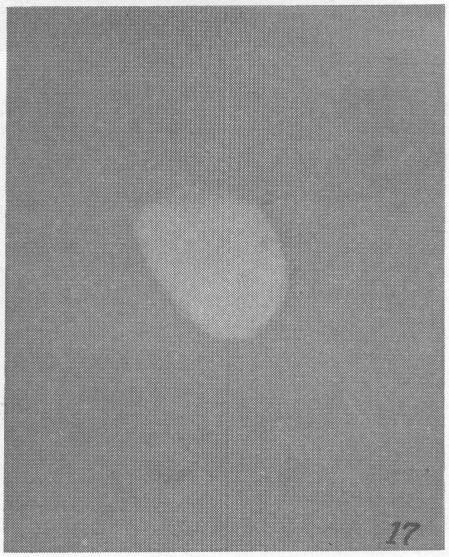
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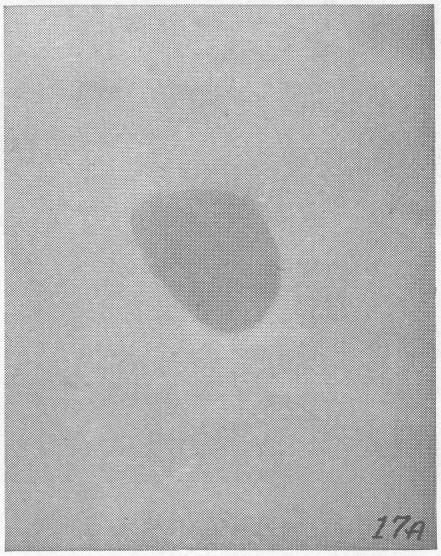
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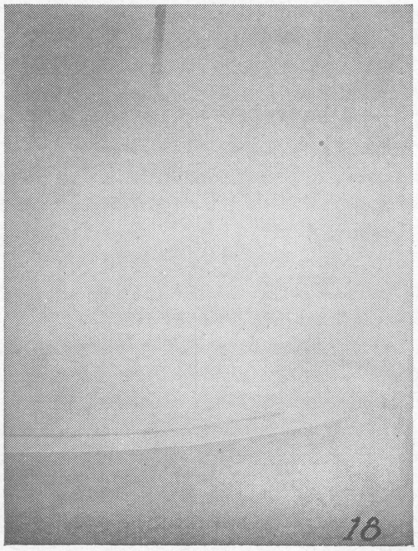
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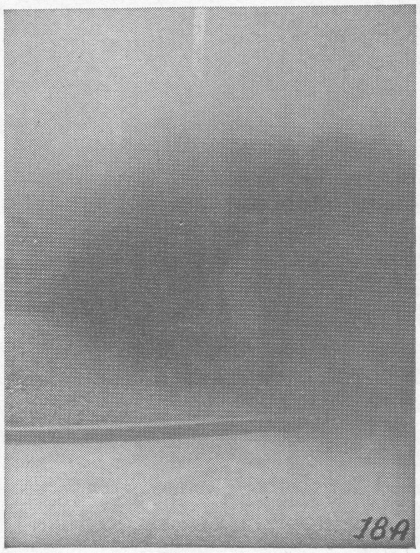
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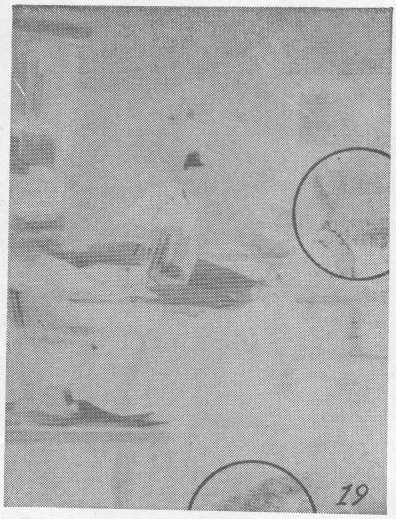
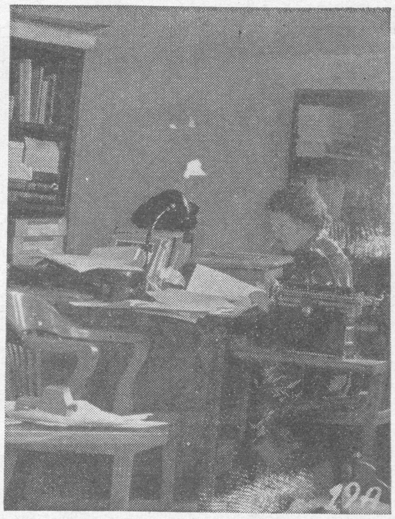
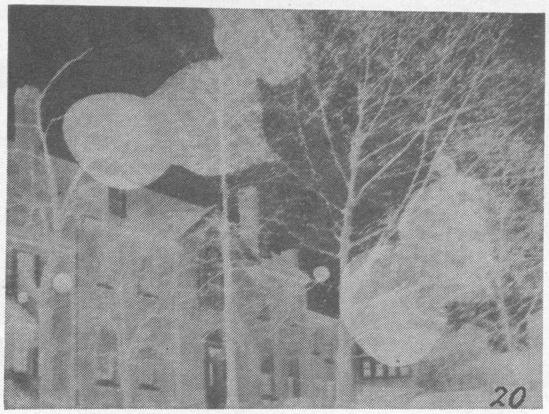
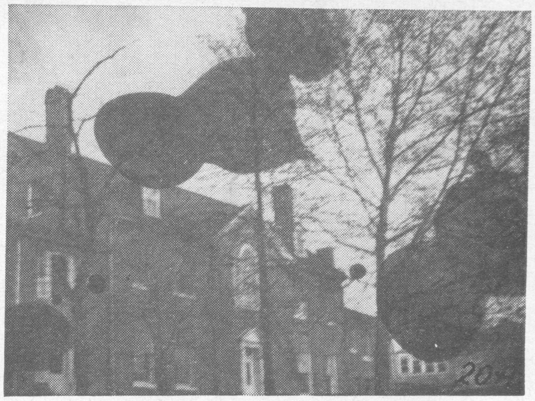
Negative

Print









Prevention: be sure to check that no object of any type is obstructing the lens.

Remedy: none.

FINGER PRINT (19): clearly defined thumb or finger impression in the emulsion.

Cause: careless handling of the film while developing or darkroom processing. Touching film with developer or hypo-laden fingers.

Prevention: handle film carefully during processing. Keep hands clean and dry.

Remedy: none.

SPLASHES (20): clear area with a splash-like appearance.

Cause: a splash of hypo falling on the film. Having film too close to the solutions while pouring into tray or tank will often cause such defects as this.

Prevention: keep film away from solutions until you are ready for processing.

Remedy: none.

RECURRING DARK LINES ACROSS FILM: dark areas recurring regularly, single or double lines.

Cause: marks ocur where film has been bent around developing racks. Most prevalent in motion picture film.

Prevention: Use tanks with bars of large diameter and avoid any sharp bends. Shift film on rack during development. Use roller type development racks.

Remedy: none.

DEVELOPING STREAKS: uneven developing streaks appearing wavy or mottled.

Cause: failure to agitate properly or the possible result of having the developer too warm.

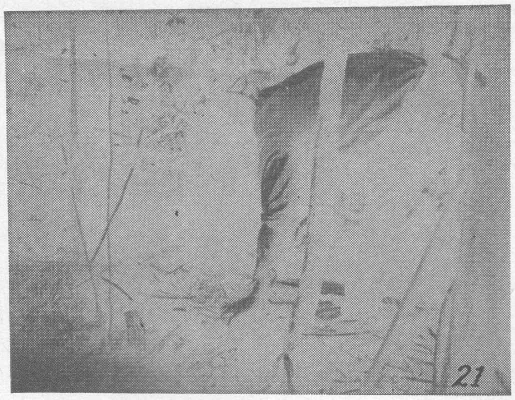
Prevention: agitate freely and be sure that the processing solutions are at the proper temperatures (68°-70°).

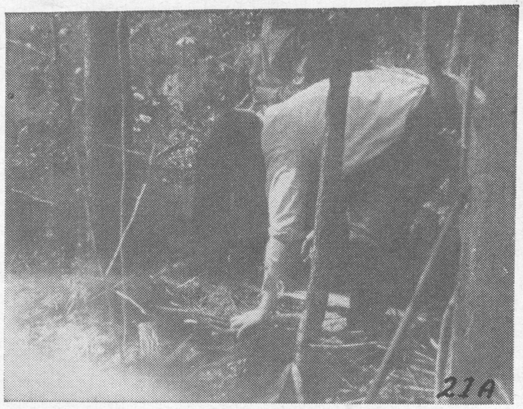
Remedy: none.

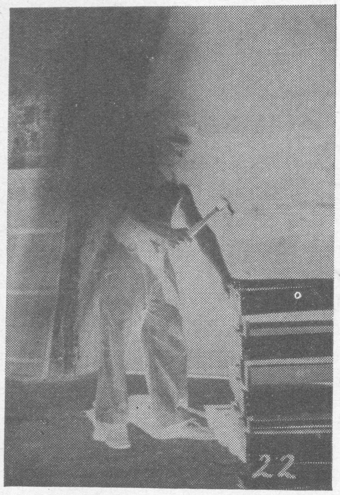
LOOSELY-WOUND ROLL (21): dark streaks or blotches around the edge of the film, indicating

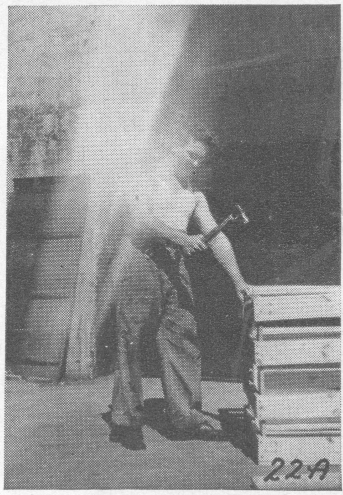
Negative

Print









that it apparently was loosened during winding.

Cause: loading in the light. Loosening of the roll will cause light streaks to penetrate the edges of roll film.

Prevention: hold roll firmly so that the roll will not become loose.

Remedy: none.

LIGHT STRUCK (22): dark areas streaking across the film.

Cause: at one time or another the film was struck by light. Loosely-wound rolls can be the cause or a leaky filmholder, filmpack or magazine. Also loose springs on camera back.

Prevention: check above for defects. Handle film packs only by the edges. Inspect magazines for leaks in leather changing bag.

Remedy: none.

BLACK SPLASHES (23): areas of any size or shape appearing on the film.

Cause: developer splashing on the film before it has been developed.

Prevention: keep film away from processing solutions until ready for processing.

Remedy: none.

BELLOWS LEAK (24): wavy, serpentine lines going in all directions on the film.

Cause: light leak within the bellows.

Prevention: check the bellows for any possible light leak replace it or have it repaired.

Remedy: none.

AIR BELLS IN HYPO (similar to those in Fig. 15): round, dark areas of oval shape on the film.

Cause: improper agitation of the film while in the hypo bath. Also a too-concentrated solution will result in gas pockets forming in the emulsion of the film (See 5.) producing blisters. Air trapped under film in hypo.

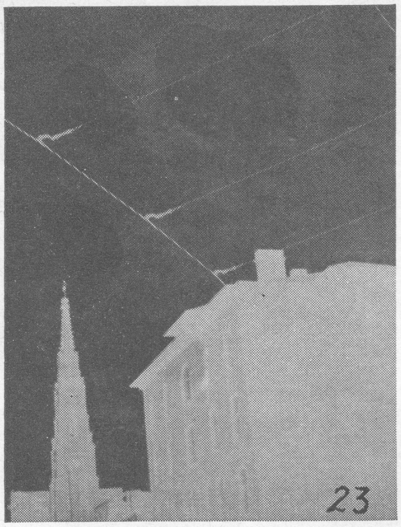
Prevention: agitate freely and evenly. Use the proper concentration of solutions. Keep solutions at right temperatures (68°-70°).

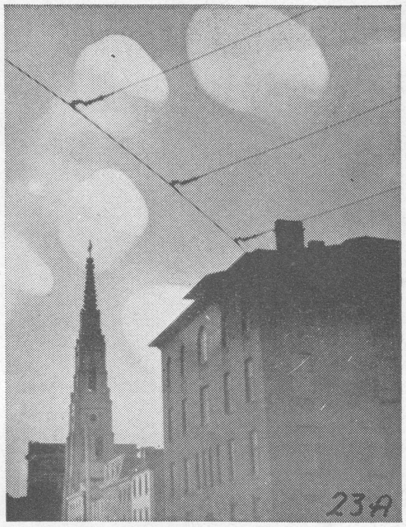
Remedy: none.

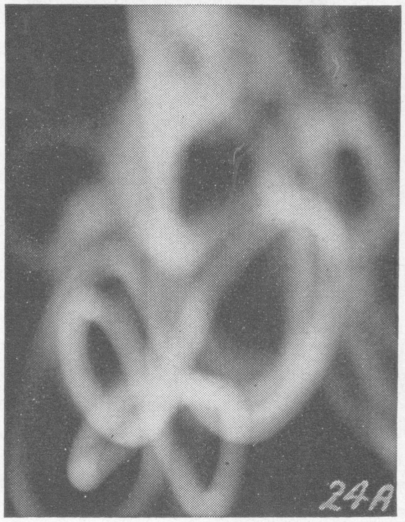
STREAKS AND MARKS: fogged streaks running across film evenly spaced from edges. Tiny round spots on the film edge.

Cause: using film hangers or clips with contaminating chemicals coming in contact with the film will result in streaks. Holding film to the light for any length of time will produce fog spots opposite

Negative **Print**







each hanger hole.

Prevention: use clean clips and hangers and do not expose film too long to the safelight.

Remedy: none.

RED WINDOW IMPRESSION (25): black, circular spot with possible black strip close to the edge of the film.

Cause: cameras of the roll-film type are equipped with a red circular window showing the numbers on the paper film backing. Too much light penetrating this window will cause impressions on the film.

Prevention: cover with a piece of black tape or use the little sliding disc provided on some cameras.

Remedy: none.

FILM BLACK (EDGES CLEAR) (26): film totally black except for its edges.

Cause: either the front shutter failed to close or one of the focal-plane type was wound without closing the front shutter or inserting the film slide. Film black or fogged but having clear edges indicates trouble within the camera.

Prevention: check shutters.

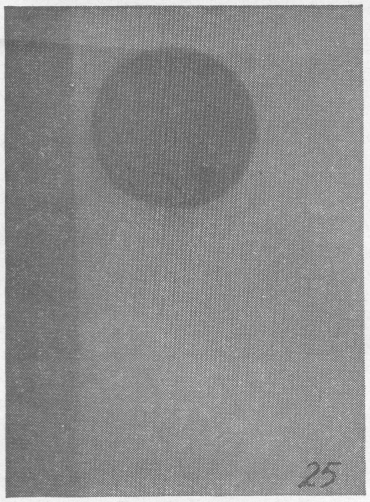
Remedy: none.

FILM BLANK (opposite of 26): film totally blank and clear. No image visible whatsoever.

Cause: (1) shutter failed to open; (2) slide not pulled out when making exposure; (3) failure to remove the lens cap; (4) making exposure with focal plane shutter, with front shutter closed; (5) "developing" film in hypo or totally-exhausted developer, etc.

Prevention: check to see if the above mentioned causes have been taken care of. Shutter may need

Negative **Print**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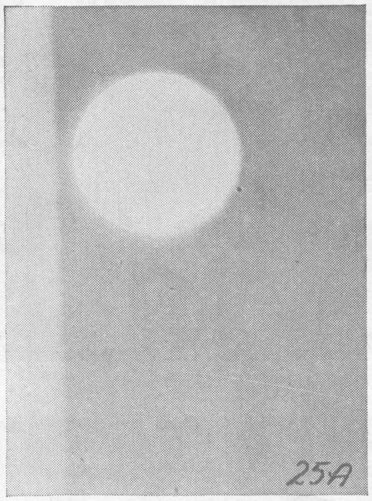
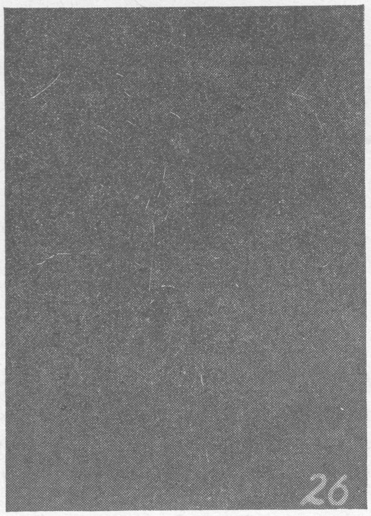

25A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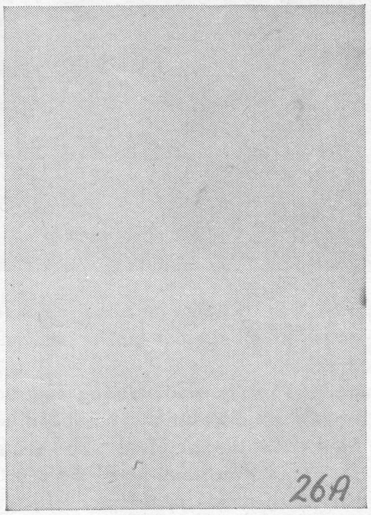

26A

to be repaired; (2) be sure to pull slide; (3) remove lens cap from the front of the lens; (4) check front shutter; (5) use correct solutions.

Remedy: none.

MOTTLE (27): wavy or uneven appearance in the development of a film, some areas being more dense than others.

Cause: too-fast development, developer too warm, or improper agitation.

Prevention: regulate developing time, keep developer between 68°-70°F., and while developing use constant agitation.

Remedy: none.

STATIC MARKS (28): tree- or fork-like lines reaching out from a common center. May occur at any point on the film. (Photo by P. Hadley).

Cause: a discharge of static electricity onto or over the surface of the film. Usually occurs in dry, cold weather when the film is handled or moved, the charge sometimes building up in camera or dark slide. Rubbing of film over light trap in film packs will also generate the charge under the right conditions.

Prevention: handle film carefully. Pull film-pack tabs and dark slides evenly and slowly. Most cameras made of metal produce little or no static marks and the fault itself is rare.

Remedy: none.

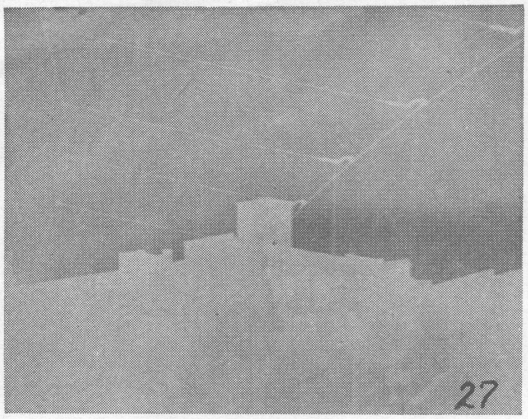
PART OF IMAGE NOT SHARP: subject may be sharp with foreground or background unsharp.

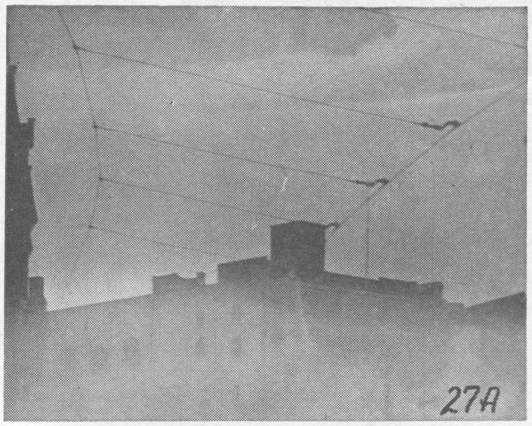
Cause: diaphragm open too wide, narrowing depth of field.

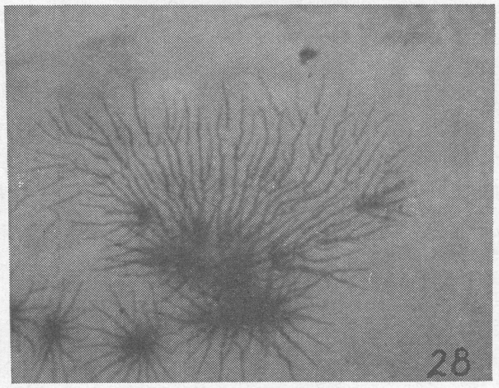
Prevention: use smallest aperture consistent with shutter speed. Use Depth of Field Guide.

Remedy: none.

Negative **Print**







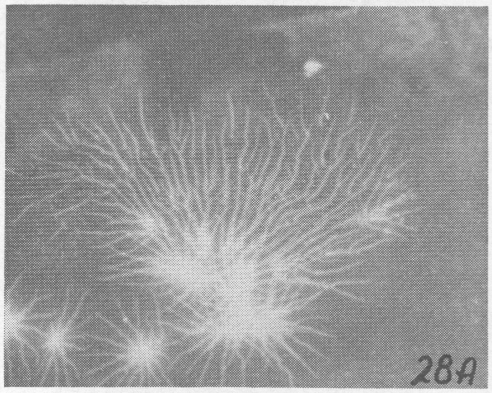


IMAGE ENTIRELY BLURRED (29): image blurred, with double images of all subject matter at similar angles to each other.

Cause: camera movement while making exposure.

Prevention: use highest possible shutter speed consistent with light conditions. Hold the camera steady and do not make hand-held shots at a speed less than 1/50 second. Use a tripod whenever possible.

Remedy: none.

SUBJECT BLURRED, REST SHARP (30): subject blurred but not out of focus, background and foreground sharp.

Cause: insufficient shutter speed to stop subject motion.

Prevention: when shooting subjects in action be sure to use a shutter speed that will stop the action completely. When photographing people or animals, remember that the motion of the limbs is usually faster than the body and a higher speed is required. Motion across the camera requires a higher speed than movement at an angle, toward, or away from the camera.

Remedy: none.

IMAGE ELONGATED: elongation of the image in the direction of travel.

Cause: focal plane shutter slit moved parallel to, and in same direction as image travels.

Prevention: focal plane shutter should move at right angles to image travel.

Remedy: none.

IMAGE DISTORTED: Many characteristic faults appear under this heading and they are the result of defects in the lens, or the improper use of the optical system of the camera. The most outstanding defects occurring are: 1—the distortion of a bright point in the picture into a pear-shaped spot. 2—The center of the picture is in sharp focus but the outer edges are out of focus, or vice versa. 3—The image is sharp only in a circular area in the center of the film, the outer edges being diffused. 4—The illumination of the negative is uneven, more light reaching one section than another. 5—The image is objectionably curved, especially at the edges.

Causes: 1—coma, an inherent lens fault. 2—curvature of field, a lens defect. 3—The use of a lens which does not cover the entire negative area. 4—May be due to lens being off center or the use of a lens which does not cover the entire area of the negative. 5—curvilinear distortion, usually found in the cheap lenses.

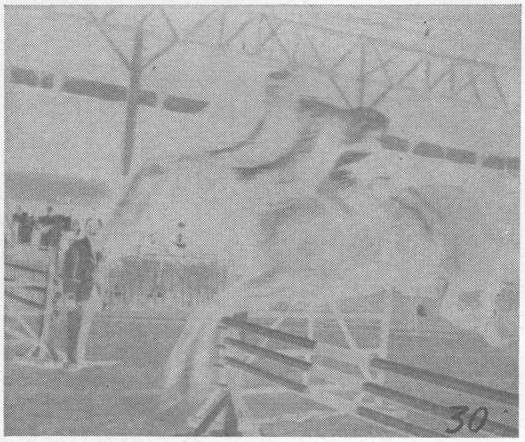
Preventions: coma and curvature of field (1 & 2) cannot be prevented except by the lens manufacturer. 3—The use of a lens of different focal length, which will cover the film area. 4—Use another lens. 5—lens defect, use better grade lens.

Remedy: none, other than changing the lens.

Negative **Print**

29

29A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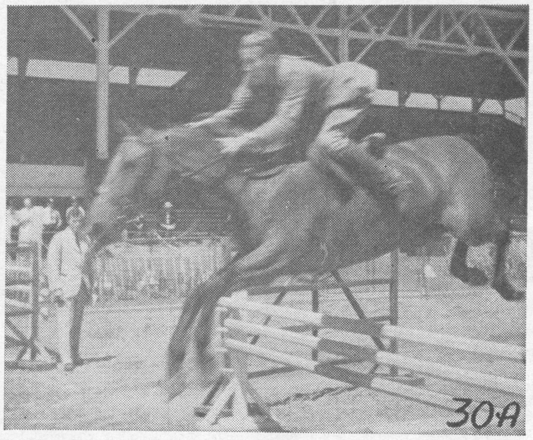

30A

FILM SHRUNK: negative is not in proper proportion to original. Important in separation negatives.

Cause: swelling, expanding, or contraction of the film.

Prevention: process films in even temperatures and where registration work is done plates instead of film are recommended.

Remedy: none.

FILM BUCKLED: portion of film appears fuzzy and out of focus.

Cause: failure, when loading, to place both sides of film in holder, or forcing film thus causing it to buckle. Also exposure to excessive heat.

Prevention: carefully load film into the holders and maintain even and constant temperatures.

Remedy: none, except for retouching, not recommended.

MOVING SUBJECT SHARP, BACKGROUND BLURRED:

Cause: moving the camera while shooting a moving subject such as a car, train, etc., thus resulting in the background being blurred.

Prevention: eliminate camera movement by increasing the shutter speed, thus maintaining the sharpness of the background.

Remedy: none.

IMAGES OVERLAP (31): part of the first exposure on one half the film appears as a single exposure while the latter half is covered by the first half of the next exposure.

Cause: failure to turn the film all of the way to the next number, bringing a whole new portion of film into position behind the lens.

Prevention: be sure that the winding knob is turned to the next exposure. If the camera has a red window through which the numbers on the paper backing may be seen, be sure the next number appears.

Remedy: none.

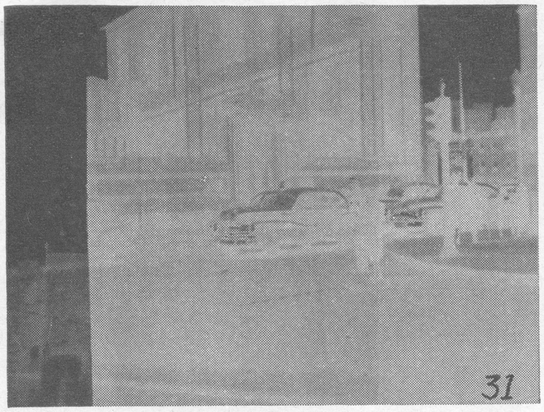
IMAGE CUT OFF (32): entire negative is distinctly sharp and clear but part of subject has been cut off.

Cause: failure to use view finder correctly. View finder out of line and not indicating the true area photographed by the lens.

Prevention: keep image within limits of view finder. Do not take vertical picture with view finder horizontal, and vice versa. Allow ample room around subject. Compare scene shown by lens with that encompassed by finder.

Remedy: none.

Negative **Print**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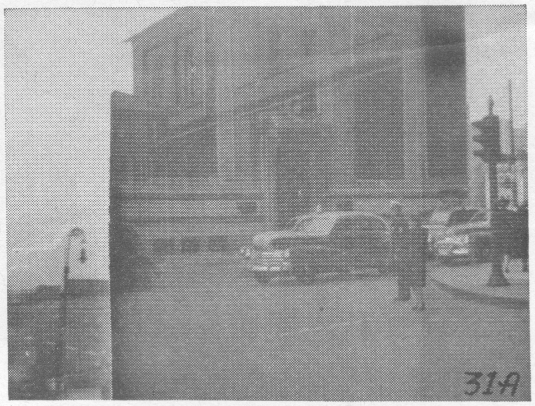
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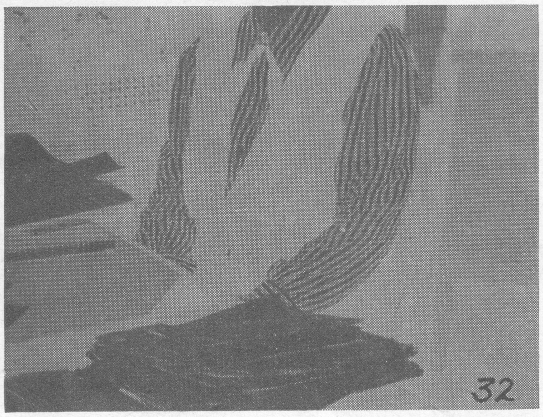
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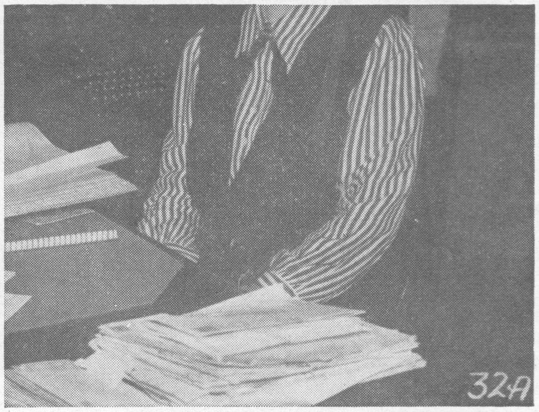

32A

TWO IMAGES ON FILM (33): double exposure, two sharp and distinct images appearing on the same film. (See 31.)

Cause: two exposures have been made on the same sheet of film. Failure to change the film or turn winding knob to next number will produce the double exposure.

Prevention: check slide to see if the film has already been exposed. In roll type, be sure to turn winding knob after each exposure, with film packs pull the tab following each exposure.

Remedy: none.

CIRCULAR IMAGE, OUT OF FOCUS ON CLEAR FILM (34): a round, circular, indistinct image on film, rest clear.

Cause: neglecting to pull out the lens before making the exposure; occurs most frequently on miniature cameras which require the lens to be pulled into operating position.

Prevention: pull lens out before making exposure.

Remedy: none.

IMAGE PARTIALLY DEVELOPED, REST OF FILM BLACK (35): part of the image has been developed normally while the remaining part is completely black.

Cause: film has stuck together after being in developer long enough for emulsion to absorb some solution. The films still stuck together are transferred to the hypo and the white light has been turned on. The hypo, not reaching the emulsion, does not render it insensitive to light.

Prevention: immerse films one at a time, keeping them well separated and agitated.

Remedy: none.

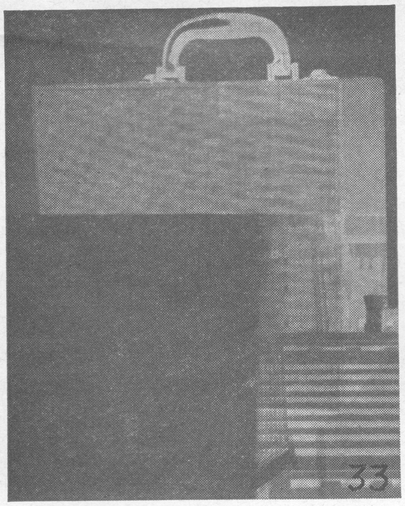
IMAGE PARTIALLY DEVELOPED, REST OF FILM CLEAR (opposite of 35): part of the image is normally developed while the rest of the film is under-developed or clear.

Cause: generally occurs when two or more sheets of film stick together in the developing solution and are separated before fixing.

Prevention: place films one at a time in the developer, hang in hangers, or if tank is used be sure that films are separated enough so that when they become limp they will not sag and touch.

Remedy: usually none; local intensification may help.

Negative **Print**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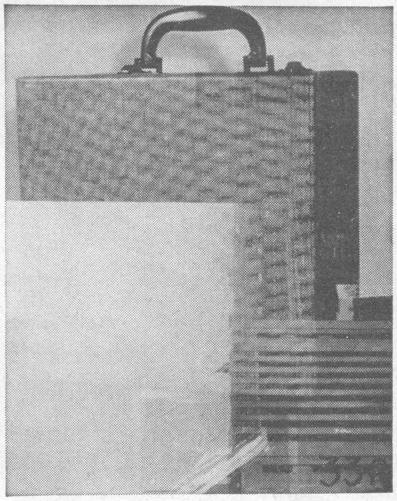
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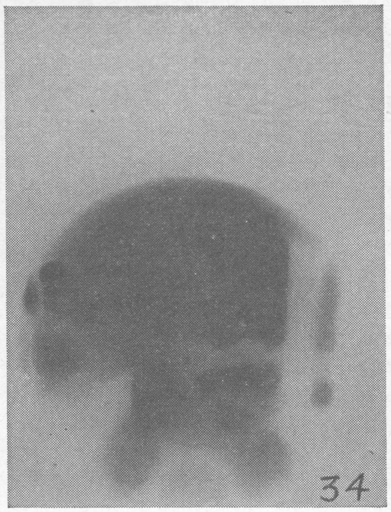
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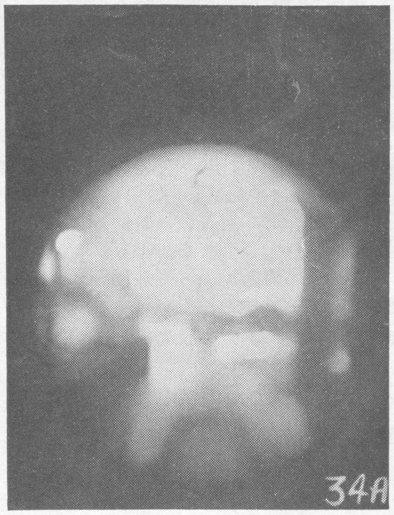
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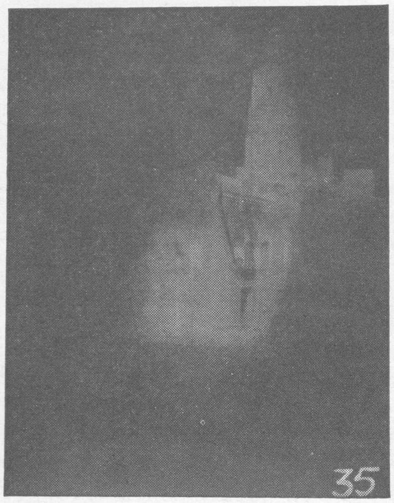
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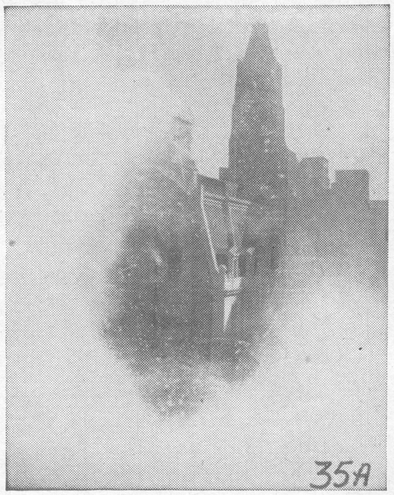

35A

FOG

What is more disturbing than to see a perfectly good negative ruined by the veiling known as fog, which produces an extra density other than the image density? It is produced, however, during processing, loading or unloading in the light, or during exposure through some unwanted light penetrating camera or bellows. It is almost impossible to determine the type of fog just by examining the negative, so listed below are a few fog types and their preventions.

EMULSION FOG: a general overall veiling of the film, not due to light or chemical causes .

There are a number of reasons for the occurrence of emulsion fog. (1) The presence in the emulsion of developable silver halide grains where the negative has not been exposed. (2) Possible defects in the manufacture of the film. (3) The use of films which have exceeded the expiration date given by the manufacturer by a considerable amount. (4) Bringing the film into contact with fogging material (radiation, etc.). (5) exposure of the film to chemical gases and fumes.

The respective preventative measures for the causes listed above are as follows: 1—always use clean tanks or trays for the development of films, in conjunction with properly mixed solutions of the right temperature. 2—this fault cannot be detected until the damage is done, but if the film is defective, discard the remainder, do not chance using it. 3—the expiration date given by the manufacturer should be respected. Films may sometimes be used after this date but only if the storage conditions have been practically perfect. Test a few sheets before using on any important job.
4- and 5—avoid poor storage conditions including exposure to illuminating gas, sulphide odors from toning solutions, etc. Excess heat and moisture are also damaging to the film.

There are no possible remedies for the above mentioned defects. Film defects originating in manufacturing are rare, even in the case of fog formation from outdated film.

DICHROIC OR GREEN FOG: film possessing this two-color fog, appears with a greenish, metallic sheen on the surface of the film, but when held to a reflected light it is pinkish in appearance.

Dichroic fog results from fixing in exhausted fixing bath or a fresh fixing bath that is lacking in acid. It can also be caused by exhausted developer and developer that has been contaminated with sodium sulphide, ammonia, or sulphite.

Using a fresh fixing bath, plus acid will often prevent dichroic fog. Fresh developer, clean of contaminating solutions is also a safe prevention.

A possible remedy is immersing the film in a weak acid potassium permanganate solution which may remove most of the fog.

AGE AND STORAGE FOG: fog prevailing under this condition is due to prolonged storage of film that has gone beyond its expiration date. This type of fog generally occurs under hot, humid conditions and particularly if film (even when fresh) is exposed to gases and fumes.

Store film in a cool, dry place, and especially away from exposure to gases and fumes such as coal gas, turpentine, benzol, and hydrogen sulphide.

FORCED DEVELOPMENT FOG: films being forced beyond the required development time will fog. The amount of fog occurring increases with development time. If contrast is desired then use a more-energetic developing solution for faster developing.

Remedy is almost impossible except for reduction in Farmer's Reducer which may effect a slight improvement.

AERIAL FOG: film constantly exposed to air during development will acquire a veiling commonly known as aerial fog. Developers of the hydroquinone type form this type of fog, especially in a highly alkaline solution.

A practice of examining the film only when necessary, plus the addition of certain desensitizers such as phenosafranin and pinakryptol green, will lessen aerial fog.

FILM FOGGED, INCLUDING EDGES (36): a fog-like veiling over the entire film, including the edges.

Cause: film was exposed to light before being loaded in camera or after it was removed. Chemical fog will also affect edges.

Prevention: seal darkroom light leaks, check safelight, keep solutions fresh, and avoid removing film from developer until time is up.

Remedy: usually none. Farmer's reducer may help.

FILM FOGGED, EDGES CLEAR (37): veiling over entire film excepting edges.

Cause: light leak in the camera or allowing film holders to remain open under safelight or other illumination. The film edges, being protected by the grooves, remain clear.

Prevention: check camera or shutter for leaks.

Remedy: none, although Farmer's Reducer may help.

FILM FOGGED IN SPOTS (38): fogged, indistinct areas on film.

Cause: light source or strong light entering lens: reflections from shiny spots inside lens barrel or camera.

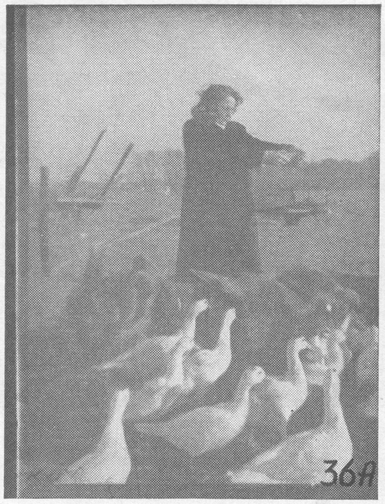
Prevention: use lens shade or otherwise shield lens from extraneous light.

Remedy: usually none, although local reduction may help.

Negative

Print

36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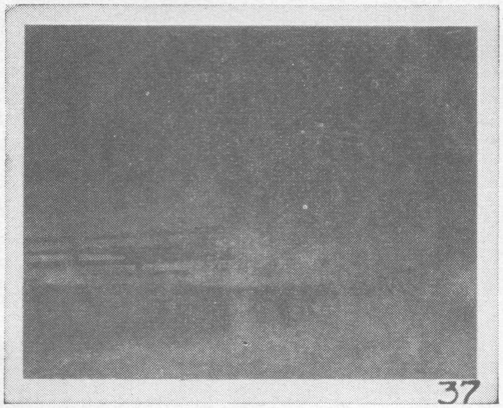
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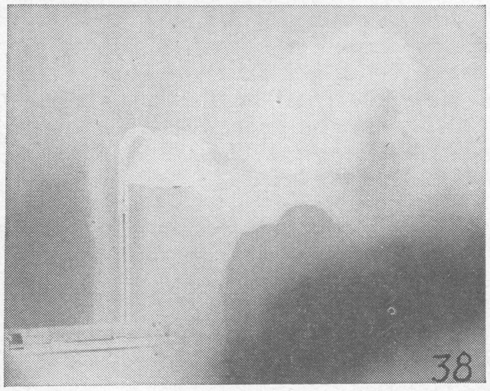
37A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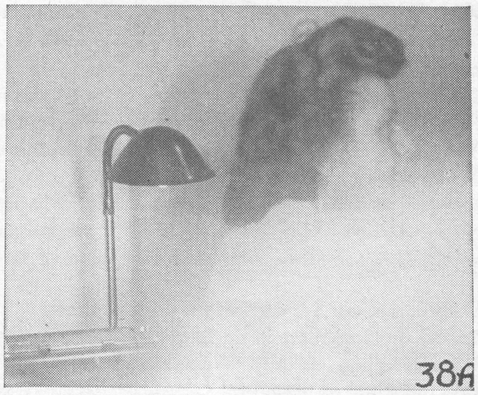

38A

STAINS

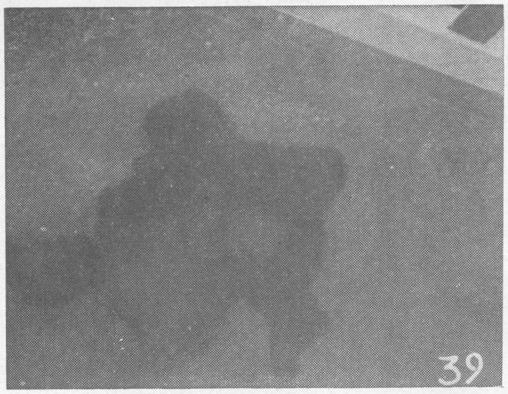
STAINS: stains are just as annoying as fog when they appear on the negative, and they occur just about as frequently. Stained films may appear yellow-brown, green, blue, opalescent, silver or faded, or may take the appearance of a scum.

YELLOW-BROWN STAINS (39): yellowish or brownish stains occurring anywhere on film.

Cause: faulty developer, oxidation products in developer, alkaline or decomposed fixing bath. Negative not completely covered in fixing bath. Insufficient fixing and washing.

Prevention: use fresh solutions; keep films covered in all baths; fix and wash thoroughly.

Negative **Print**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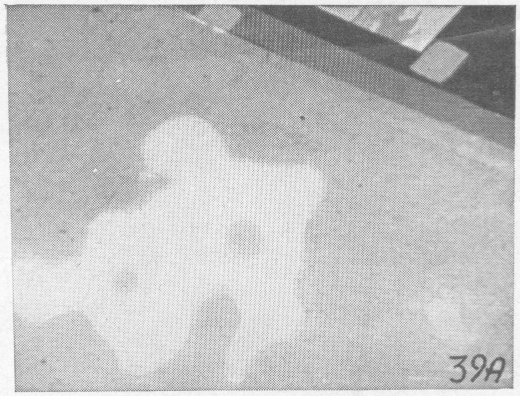
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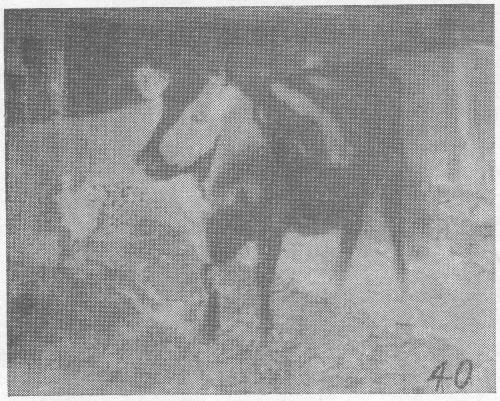
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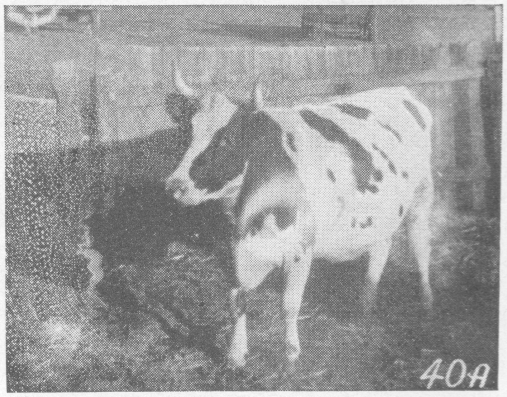

40A

Remedy: bleach negative and redevelop or make copy negative through deep-yellow filter on pan film.

WHITE SCUM (40): deposit of aluminum sulphite, forming in fixing bath, or white crystalline deposit.
Cause: hypo decomposed; films not washed sufficiently after fixation. If greenish-white, caused by the use of too alkaline a developer in conjunction with chrome-alum, short-stop bath.
Remedy: rewashing and wiping film. Scum is best removed before negative has dried from original washing, it is sometimes impossible to remove later.

SLIME: a slimy deposit on the film surface.
Cause: films coming in contact with tanks or trays which are slimy or oily. Also comes from oil or grease floating on developer.
Prevention: clean tanks or trays frequently.
Remedy: can be removed while negative is still wet but not after it has dried.

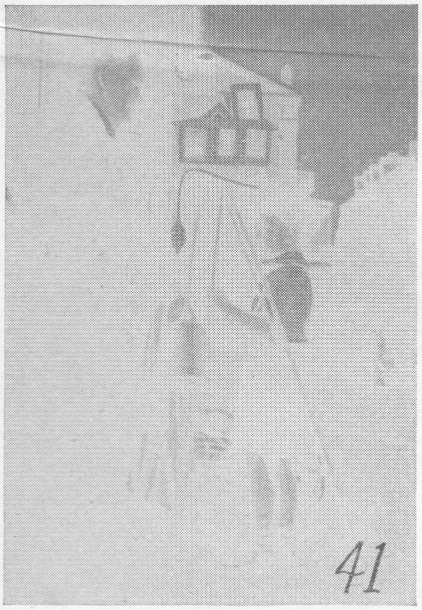
SILVERY DEPOSIT: a streaky, silvery deposit on film surface.
Cause: metallic silver formed during development or silver sulphide formed by action of hydrogen sulphide in air with film surface.
Prevention: keep tanks or trays clean.
Remedy: wipe film before drying.

DYE STAINS: may be green, blue, red, brown and purple, appearing on film.
Cause: failure of sensitizing dyes to dissolve during development.
Prevention: agitate during development and do not allow films to mat together during fixing.
Remedy: may be soaked out in clean water or some will fade upon exposure of negative to strong sunlight for a few hours.

FADED STAINS: yellowish, faded, image stain.
Cause: incomplete washing, fixing and leaving sulphur compounds on film which will develop stain over period of time.
Prevention: fix and wash films thoroughly.
Remedy: bleach negative in S-6 Stain Remover and redevelop.

NEGATIVE THIN—LOW CONTRAST (41): negative with very thin image, lacking in shadow detail.
Cause: failure to give film the required exposure and full development time.
Prevention: give proper exposure and full development.
Remedy: none for lack of shadow detail. Print film on hardest paper.

Negatives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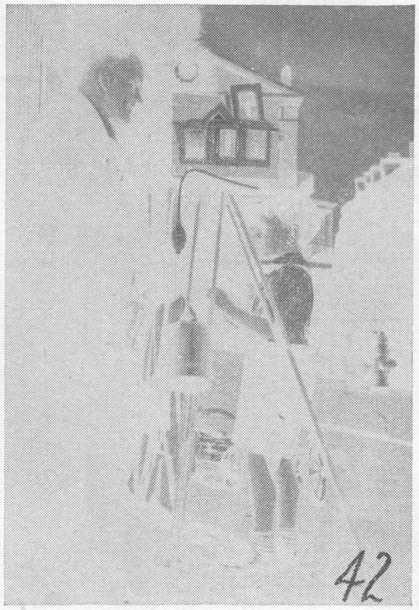
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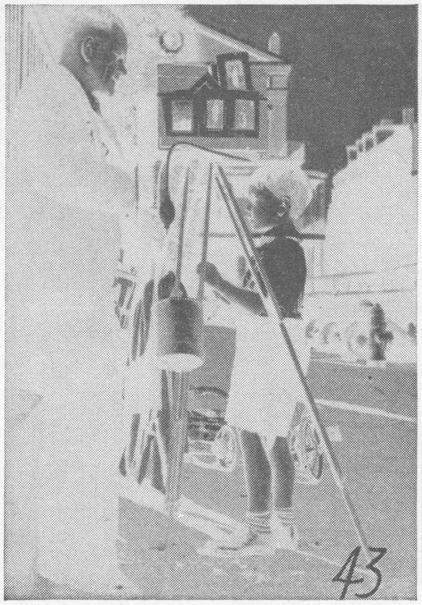
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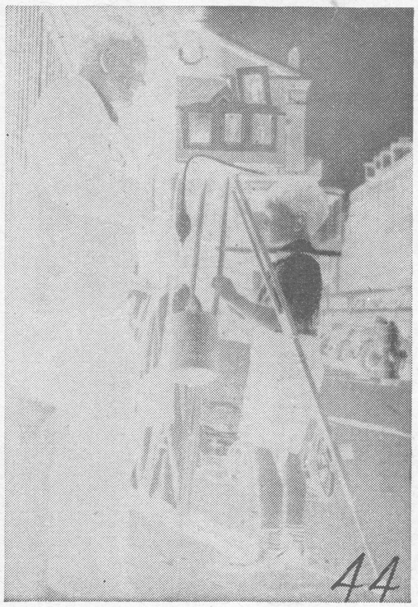
44

NEGATIVE THIN—CONTRAST NORMAL (42): negative will be thin with no shadow detail.

Cause: failure to give sufficient exposure, development correct.

Prevention: increase exposure.

Remedy: none for lack of shadow detail. Print on normal contrast paper.

NEGATIVE THIN—HIGH CONTRAST (43) negative thin, lacking shadow detail, but contrasty.

Cause: under-exposure and development extended in attempt to compensate for incorrect exposure.

Prevention: give correct exposure and development.

Remedy: none for lack of shadow detail. Print on soft paper.

NEGATIVE THIN—FULL SHADOW DETAIL (44); negative is thin but has detail in shadows.

Cause: exposure was correct but film was not developed long enough.

Prevention: develop films for time recommended while maintaining same exposure.

Remedy: intensify.

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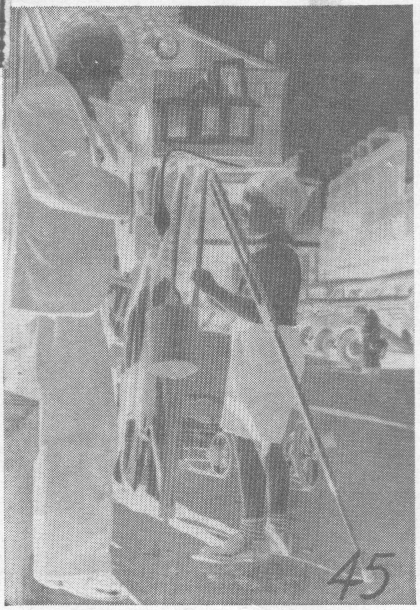
Negatives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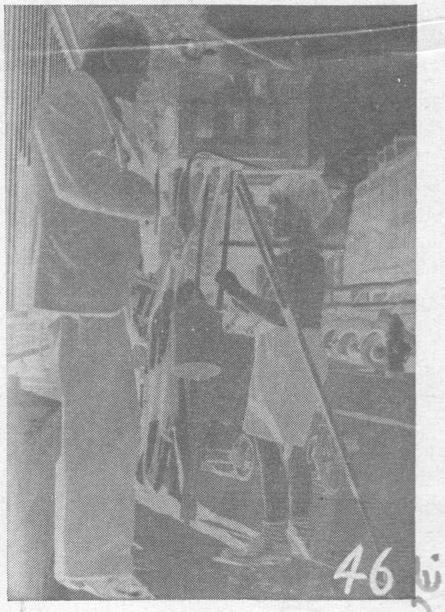
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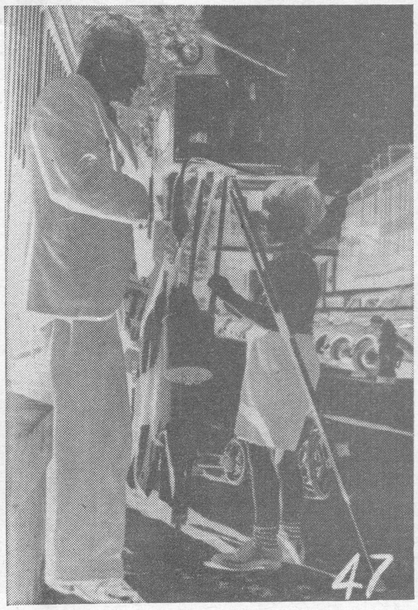
47

From:
DELTA PHOTO SUPPLY CO.
690 THIRD AVE. N.Y.

To: Dave Colson
117 E Nelson Ave.
Alexandria, Va.

NEGATIVE DENSE—LOW CONTRAST (45) negative will appear heavy with strong highlights.

Cause: film over-exposed and development shortened in attempt to compensate.

Prevention: cut exposure to normal and increase development time to normal.

Remedy: print on contrast paper.

NEGATIVE DENSE—NORMAL CONTRAST (46): film will appear dense with highlights blocked.

Cause: film over-exposed, development normal.

Prevention: decrease exposure, maintain same developing time.

Remedy: reduce in Farmer's Reducer.

NEGATIVE DENSE—HIGH CONTRAST (47): image barely visible, almost black, density high.

Cause: negative has been both over-exposed and over-developed.

Prevention: give proper exposure and development.

Remedy: reduce, as required, in Farmer's reducer. Print on soft paper.